APPENDIX A
Distribution List

APPENDIX A – DISTRIBUTION LIST

Federal Government Agencies

Advisory Council on Historic Preservation
    Office of Federal Programs
        Charlene D. Vaughn, Assistant Director for Federal Program Development
Army Corps of Engineers
    Huntington District, WV
        Adam Fannin, Regulatory Project Manager
        Mike Hatten, Regulatory Branch Chief
        Ginger Mullins, Chief
    Pittsburgh District, PA
        Michael Fodse
        Nancy Mullen, Regulatory Branch Chief
    Planning and Policy Division
        John Furry, Senior Policy Advisor
Council on Environmental Quality
    Ellen Athas, Senior Counsel
    Horst Greczmiel, Associate Director for NEPA Oversight
Department of Agriculture
    Conservation and Environmental Program Division
        Nell Fuller, National Environmental Compliance Manager
    National Resources Conservation Service (NRCS)
        Andree DuVarney, National Environmental Coordinator
    Forest Service-Ecosystem Management Coordination
        Joe Carbone, Assistant Director, NEPA
Department of Commerce
    National Oceanic and Atmospheric Administration, National Marine Fisheries Service
        Steve Kokkinakis, NEPA Policy and Compliance
        Steve Leathery, National NEPA Coordinator
Department of Energy
    Division of Natural Gas Regulatory Activities
        John Anderson, Director
    Office of Environmental Management
        Mark Whitney, Principal Deputy Assistant Secretary
    Office of NEPA Policy and Compliance
        Carol M. Borgstrom, Director of Office and General Counsel
Department of Homeland Security
    U.S. Customs and Border Protection
        Christopher Oh, Branch Chief
Department of Interior
    Bureau of Indian Affairs
        Marv Keller, Chief, Division of Environmental and Cultural Resources Management

Federal Government Agencies (continued)

Bureau of Land Management
Kerry Rogers, Senior NEPA Specialist
Bureau of Ocean Energy Management
James F. Bennett, Chief, Division of Environmental Assessment
Bureau of Safety and Environmental
Charles B. Barbee, Chief Environmental Enforcement Division
Fish and Wildlife Service (USFWS)
Pat Carter, National Coordinator
Ohio Ecological Services Field Office
Angela Boyer, Endangered Species Coordinator
Mary Knapp, Field Supervisor
Pennsylvania Field Office
Robert Anderson, Fish and Wildlife Biologist
West Virginia Field Office
Tiernan Lennon, Fish and Wildlife Biologist
John Schmidt, Project Leader
Northeast Region (5)
Martin Miller, Regulatory Branch Chief
Geological Survey (USGS)
Environmental Management Branch
Esther Eng, Chief
National Parks Service
Patrick Walsh, Chief Environmental Planning and Compliance Branch
Mark Weaver, Superintendent
Rivers, Trails, and Conservation Assistance Program, OH
Andrea Irland
Rory Robinson
Office of Environmental Policy and Compliance, DC
Department of Health and Human Services
Sharunda Buchanan, Director, Division of Emergency and Environmental Health Services
Edward Pfister, Environmental Program Manager
Department of Housing and Urban Development
Office of Environment and Energy
Danielle Schopp, Community Planner
Department of Justice
Environment and Natural Resources Division
Beverly Li, NEPA Coordinator
Department of State
Bureau of Oceans and International Environmental and Scientific Affairs
Alexander Yuan, Foreign Affairs Officer

Federal Government Agencies (continued)

Department of Transportation
- Pipeline and Hazardous Materials Safety Administration
  - Magdy El-Sibaie, Associated Administrator for Hazardous Materials Safety
  - Sherri Pappas, Senior Assistant Chief Council
  - Jeffrey Wiese, Associate Administrator for Pipeline Safety
- Office of Pipeline Safety
  - Bryn Karaus, Senior Attorney
  - Kenneth Y. Lee, Director, Engineering and Research Division
  - Karen Lynch, National CATS Coordinator
- Office of Assistant Secretary for Transportation Policy
  - Camille Mittelholtz, Environmental Policy Team Coordinator
  - Helen Serassio, Senior Environmental Attorney Advisor
- Surface Transportation Board
  - Section of Environmental Analysis
    - Victoria Rutson, Chief

Environmental Protection Agency
- Office of Enforcement and Compliance Assurance
  - Cynthia Giles, Assistant Administrator
- Office of Federal Activities
  - Susan E. Bromm, Director
  - Cliff Rader, Director of NEPA Compliance Division
- Region 3, NY
  - Jerome Blackman, Natural Gas STAR
  - Thomas G.S. UyBarreta, Environmental Protection Specialist, EAID
- Region 5, IL
  - Virginia Laszewski, NEPA Implementation Section

Federal Senators and Representatives

U.S. House of Representatives Congressman, Evan Jenkins, WV
U.S. House of Representatives Congressman, Bill Johnson, OH
U.S. House of Representatives Congressman, David B. McKinley, WV
U.S. House of Representatives Congressman, Alex Mooney, WV
U.S. House of Representatives Congressman, Tim Murphy, PA
U.S. House of Representatives Congressman, Steve Stivers, OH
U.S. House of Representatives Congressman, Pat Tiberi, OH
Senator, Sherrod Brown, OH
Senator, Shelly Moore Capito, WV
Senator, Joe Manchin, WV
Senator, Rob Portman, OH
Senator, Robert Casey Jr., PA
Senator, Patrick Toomey, PA
Senate Energy and Natural Resources Committee, Lisa Murkowski

State Senators and Delegates

Chief of Staff Beth Hansen, OH
Senate President Jeffrey V. Kessler
President Pro-Tempore Larry J. Edgell, WV
State Representative Jack Cera, OH
State Representative Jim Christiana, PA
State Representative Bill Hays, OH
State Representative Brian Hill, OH
State Representative Ron Hood, OH
State Representative Debbie Phillips, OH
State Representative Tim Schaffer, OH
State Representative Ryan Smith, OH
State Representative Pam Snyder, PA
State Representative Andy Thompson, OH
State Senator Troy Balderson, OH
State Senator Camera Bartolotta, PA
State Senator H. Truman Chafin, WV
State Senator Bill Cole, WV
State Senator Rocky Fitzsimmons, WV
State Senator Lou Gentile, OH
State Senator Jay Hottinger, OH
State Senator Art Kirkendoll, WV
State Senator Bob Peterson, OH
State Senator Ron Stollings, WV
State Senator Jack Yost, WV
Delegate David A. Evans, WV
Delegate Michael T. Ferro, WV
Delegate Tim Kinsey, WV
Delegate Don Perude, WV
Delegate Doug Reynolds, WV
Delegate Dale Stephens, WV

State Government Agencies

Appalachian Partnership for Economic Growth, OH
- Katy Farber, Project Manager
- Marty Walsh, Vice-President

Hocking County Community Improve District, OH
- Joy Davis, Executive Director

Jobs OH
- David Mustine, Senior Managing Director

State of Kentucky
- Department of Fish and Wildlife Services
  - Karen Waldrop, Wildlife Director
- Division of Forestry
  - Diana Olszowy
- Heritage Council
  - Kary Stakelbeck, Program Administrator
  - Craig A. Potts, Executive Director
- State Nature Preserves Commission
  - Sara Hines, Data Manager
- USFWS Kentucky Ecological Services
  - Lee Andrews, Field Supervisor

Oak Hill Chamber of Commerce, OH
- Kurtis Strickland

State of Ohio
- Governor
  - John Kasich, Governor
- Department of Natural Resources
  - Brian Mitch, Compliance Coordinator
  - Fred Shimp, Assistant Director
  - Jim Zehringer, Director
  - John Navarro, Division of Wildlife
  - Nathan Reardon, Compliance Coordinator, Division of Wildlife
  - John Kessler, Office of Real Estate
  - Tara Paciorek, Office of Real Estate
  - Jeff Johnson, State Parks Division
- Department of Transportation
  - Aaron Wolfe, Director
  - Steve T. Williams, District Deputy Director

State Government Agencies (continued)

Environmental Protection Agency
Craig Butler, Director
Holly Tucker, Environmental Manager
Karl Gebhardt, Deputy Director for Water Resources
Mike Hopkins, Assistant Chief of Permitting Air
Nick Hammer, Environmental Specialist II
Rachel Taulbee, Wetland Permitting Unit Supervisor
Tiffani Kavalec, Assistant Chief
Harry Kallipolitis, Central District Stormwater Coordinator
Jeff Bohne, Central District Water Quality Supervisor
Paul Vandermeer, Central District Stormwater Coordinator
Carol Siegley
Scott Foster, Southeast District Stormwater Coordinator
Aaron Wolfe, Southeast District Stormwater Coordinator
Historic Preservation Office
David M. Snyder, Archaeology Reviews Manager
Mark Epstein, Department Head
Natural Resources Conservation Service
Danielle Balduff
Terry J. Crosby
State of Pennsylvania
Governor
Tom Wolf, Governor
Department of Agriculture
Bureau of Farmland Preservation
Doug Wolfgang, Bureau Director
Department of Conservation and Natural Resources
Cindy Adams Dunn, Secretary
Emilee Boyer, Ecological Information Specialist
Su Ann Shupp, Ecological Information Specialist
Greg Podniesinski, Director of PA Natural Heritage Program
Rebecca Bowen, Bureau of Forestry Chief, Ecological Services Section
Department of Environmental Protection
John Quigley, Secretary
Joel Koricich, District Mining Manager
Andrew Zemba, IWO Director
Dana Drake, Environmental Engineer Manager, Clean Water
Chris Kriley, Environmental Program Manager, Clean Water
Don Leone, Environmental Engineer Manager, Clean Water
Alan Eichler, Environmental Program Manager, Safe Drinking Water
Bharati Vajjhala, Environmental Engineer Manager, Safe Drinking Water
Rita Coleman, Environmental Program Manager, Waterways and Wetlands
Greg Holesh, Civil Engineer Manager, Hydraulic, Waterways and Wetlands
Department of Transportation
Leslie Richards, Secretary
Richard Marker, Highway Occupancy Permits Manager
Farm Service Agency, PA
Michal Kunsman, County Executive Director

State Government Agencies (continued)

Fish and Boat Commission (PFBC)
Doug Fischer, Ichthyologist
Heather Smiles, Director of Natural Gas Section
Game Commission
Mike DiMatteo, Division of Environmental Planning and Habitat Protection Chief
Historical and Museum Commission Bureau for Historic Preservation
Serena Bellew, Bureau Director, Deputy State Historic Preservation Officer
Douglass McLearen, Archaeology and Protection Division Chief
State of West Virginia
Governor
Earl Ray Tomblin, Governor
Commerce Department
Keith Burdette, Director
Department of Environmental Protection
Jay Fedczak, Assistant Director for Air Permitting
Randy Huffman, Director
Gene Smith, Regulatory Compliance Manager
James Martin, Chief of Oil and Gas
Scott Mandinola, Director, Division of Water and Waste Management
Patrick Burch, Environmental Resources Specialist, Division of Water and Waste Management
Wilma Reip, Environmental Resources Program Manager, Division of Water and Waste Management
Connie Anderson, Division of Water and Waste Management
Brian Carr, Division of Water and Waste Management
Department of Natural Resources
Clifford Brown, Wildlife Resources Section Environmental Resource Specialist
Barbara Sargent, Wildlife Resources Section Environmental Resource Specialist
Natural Resources Conservation Service
William P. O'Donnell
Kevin Wickey
State Preservation Office
Susan Pierce, Deputy State History Preservation Officer

Local Government Agencies

Benton Township, OH
David M. Seymour, Trustee
Dean Stevens, Trustee
Robbie Davis, Trustee
Berne Township, OH
Frank J. Uhl, Trustee
James Carmichael, Trustee
Kelly E. Shull, Trustee
Blue Rock Township, OH
Dana J. Johnson, Trustee
Jerry R. Frame, Trustee
Shane Tysinger, Trustee
Bristol Township, OH
Charlie B. Moore, Trustee
Eric Ball, Trustee
Paul Wickham, Trustee
Center Township, OH
Brent Rossiter, Trustee
Charles Brooks, Trustee
Douglas E. Yontz, Trustee
Drew Dimmerling, Trustee
Melvin Tucker, Trustee
Wendell L. Warner, Trustee

Local Government Agencies (continued)

City of Cameron, WV
- Julie Beresford, Mayor
- Rosemary Humway-Yarmuth, City Council
- Ron Walker, City Council
- Walter "Rocky" Guzek, City Council
- Jack Hart, Sr., City Council
- Tommy Hart, City Council
- Helen McMasters, City Council
- Wayne Simmons, City Council

City of Logan, OH
- Martin Irvine, Mayor
- Dave Driscoll, City Council
- Doug Dicken, City Council
- Edward Tucker, City Council
- Jim Copenhaver, City Council
- Jim Robinson, City Council
- Shirley Chapman, City Council
- Teresa Scarmack, City Council

City of Moundsville, WV
- Eugene Sanders, Mayor
- David Wood, Vice Mayor, City Council
- Thomas White, Attorney
- David S. Haynes, City Council
- K. Mark Simms, City Council
- Phil Remke, City Council
- Ginger DeWitt, City Council
- Paul Dude Haynes, City Council

Deerfield Township, OH
- Casey Clemens, Trustee
- Paul Hinkle Jr., Trustee
- Terry L. Nelson, Trustee

Elk Township, OH
- Jerry Scarberry, Trustee
- Marsha Collins, Trustee
- Roy Robinette, Trustee
- Terry Walker, Trustee

Fairfield County, OH
- Jon Slater Sr., Auditor
- David L. Levacy, County Commissioner
- Mike Kiger, County Commissioner
- Steve Davis, County Commissioner
- Jeremiah D. Upp, Engineer
- Village of Breman
  - Douglas L. Hockman, Administrator
  - Josh Groce, Mayor
- Village of Sugar Grove

Falls Township, OH
- Chuck Hopkins, Trustee
- Sam Eggleston, Trustee
- Scott Harden, Trustee

Good Hope Township, OH
- Harley Goss
- Rich Hacker
- Rodney Watkins

Greene County, PA
  - Archie Trader, County Commissioner
  - Blair Zimmerman, County Commissioner
  - Chuck Morris, County Commissioner
- Conservation District
  - Zachary Basinger, Environmental Program Specialist, Soil Conservation
  - Lisa Sneider, District Manager
- Department of Economic Development
  - Robbie Matesic, Executive Director

Hocking County, OH
- Kenneth Wilson. Auditor
- Jeff Dickerson, County Commissioner
- John Walker, County Commissioner
- Sandy Ogle, County Commissioner
- William R. Shaw, Engineer

Local Government Agencies (continued)

Jackson County, OH
- Clyde Holdren, Auditor
- Justin Lovett, Prosecutor
- Edmund Armstrong, County Commissioner
- Jerry Hall, County Commissioner
- Paul Haller, County Commissioner
- Melissa B. Miller, Engineer

Village of Oak Hill
- Roy McCarty, Jr., Mayor
- Rob Leonard, City Council President
- Chad Jones, City Council
- Dan Rhodes, City Council
- JoAnne Davis, City Council
- Jody Fulk, City Council
- Terry McCain, City Council

Laurel Township, OH
- Jeff Hatfield, Trustee
- Steven Hampshire, Trustee

Lawrence County, OH
- Jason Stephens, Auditor
- Bill Pratt, County Commissioner
- Freddie Hayes Jr., County Commissioner
- Les Boggs, County Commissioner
- Douglas E. Cade, Engineer

Malta Township, OH
- Bill Greuey, Trustee
- G. Allen George, Trustee
- Rex Copeland, Trustee

Marion Township, OH
- Jeff Bates, Trustee
- John George, Trustee
- Maurice A. Warner, Trustee
- Rick Nihiser, Trustee
- Scott Kitzmiller, Trustee
- Shawn Daubenmire, Trustee

Marshall County, WV
- Brian Schambach, County Commissioner
- Robert Miller Jr., County Commissioner
- Scott Varner, County Commissioner

County Commission
- Betsy Wilson Frohnapfel, Staff Administrator
- Missy Tschappat, Staff Secretary
- Howard W. Coffield, Staff Supervisor of Buildings and Grounds

McConnelsville City, OH
- Terry Robison, City Council President
- Darrell Newton, City Council
- Mark Dille, City Council
- Mary Gessel, City Council
- Michele Blackburn, City Council
- Tom Bragg, City Council

Meigs Township, OH
- Rodney E. Dingey, Trustee
- Ronald Dee Shook, Trustee
- Stephen Zane Bradley, Trustee

Monroe County, OH
- Pandora Neuhart, Auditor
- Carl Davis, County Commissioner
- Mick Schumacher, County Commissioner
- Tim Price, County Commissioner
- Lonnie E. Tustin, County Commissioner

Village of Beallsville
- Jon C. Gramlich, Mayor
- Ladonna Carleton, City Council
- Mirko Milosavljevic, City Council
- Rick Meade, City Council
- Tye Neiswonger, City Council

Village of Clarington
- Douglas J. Wagner, Mayor

Village of Lewisville
- Nathan Betts, Mayor

Local Government Agencies (continued)

Village of Woodsfield
L. Williams Bolon, Mayor
Carol Hehr, City Council
Dale E. English, City Council
Matt Vinskovich, City Council
Mike Cox, City Council
Rick Shipp, City Council
William E. Moore, City Council
Morgan County, OH
Gary Woodward, Auditor
Adam Shriver, County Commissioner
Mike Reed, County Commissioner
Tim VanHorn, County Commissioner
Stevan Hook, Engineer
Village of McConnelsville
John W. Finley, Mayor
Morgan Township, OH
Ancil W. King, Trustee
Bo Powell, Trustee
Darel Dee Kuntz, Trustee
Muskingum County, OH
Debra Nye, Auditor
Jerry Lavy, County Commissioner
Jim Porter, County Commissioner
Todd Sands, County Commissioner
Douglas R. Davis, Engineer
Engineer's Office
Matt Russell, Administrative Deputy
Robert C. Heady, Design Engineer
Noble County, OH
Peggy Davis, Auditor
Gary Rossiter, County Commissioner
Stephen Bond, County Commissioner
Virgil Thompson, County Commissioner
Highway Department
Connie Gallaugher, Permitting Coordinator
Village of Caldwell
David Evans, Mayor
Village of Summerfield
Kurt McDowell, President
Martin Lamp, Vice-President
Brian Brant, Treasurer
Jim Johnson, Secretary
Olive Township, OH
Earl Pickenpaugh, Trustee
Jack E. Hayes, Trustee
Oran Way, Trustee
Perry County, OH
Drew Cannon, Auditor
David Freriks, County Commissioner
Ed Keister, County Commissioner
James O'Brien, County Commissioner
Timothy C. Frash, Engineer
Village of Corning
Michelle Davis, Mayor
Village of Crooksville
Darrell Lantz, Mayor
Village of Junction City
Ronald Gleason, Sr., Mayor
Village of New Lexington
Polly Pletcher, City Council President
Al Vandewater, City Council
Dale Eveland, City Council
Dick Anderson, City Council
Jeff Danison, City Council
Kathy Chute, City Council
Tim Fiore, City Council
Trent Thompson, City Council
Richhill Township, PA
Janice Campbell, Secretary
Richard King, Supervisor
Thomas Chess, Chairman
Douglass Grim, Vice-Chariman
Rushcreek Township, OH
Bill Meyers, Trustee
David L. Meyers, Trustee
Hart Van Horn, Trustee

Local Government Agencies (continued)

Salem Township, OH
- John A. Miller, Trustee
- Kenneth Jones, Trustee

Seneca Township, OH
- Bradley M. Snyder, Trustee
- Kevin D. Weckbacher, Trustee

Sharon Township, OH
- Duane Parcell, Trustee
- Gary Michel, Trustee
- Phillip C. Saling, Trustee

Summit Township, OH
- Randy D. Smith, Trustee
- Thomas Piatt, Trustee

Sunsbury Township, OH
- Randy L. Kindelberger, Trustee

Swan Township, OH
- Randall A. Trainer, Trustee
- Richard Faulkner, Trustee
- Roger Bentley, Trustee

Switzerland Township, OH
- James L. Lehman, Trustee
- Rodney Newkirk, Trustee

Vinton County, OH
- Cindy Owings Waugh, Auditor
- Jerry Zinn, County Commissioner
- Michael Bledsoe, County Commissioner
- Tim Eberts, County Commissioner
- Ron Sharett, County Commissioner

Washington County, PA
    - Diana Vaughan, County Commissioner
    - Harlan Shober, County Commissioner
    - Lawrence Maggi, County Commissioner
- Economic Development Partnership
    - Jeff Kotula, President
- Conservation District
    - Tom Ulrich, Agricultural and Erosion and Sediment Technician
    - Gary Stokum, District Manager

Washington Township, OH
- Keith Vermillion, Trustee
- Patrick Miller, Trustee

Wayne County, WV
- Kenneth Adkins, County Commissioner
- Robert Pasley, County Commissioner
- David Pennington, County Commissioner

West Finley Township, PA
- David Martin, Chairman
- Melinda Duncan, Clerk
- John Swart, Road Foreman
- Robert Scherich, Supervisor

Native American Groups

Absentee-Shawnee Tribe of Oklahoma, OK
- George Blanchard, Governor

Catawba Indian Nation, SC
- Dr. Wenonah G. Haire

Cayuga Nation, NY
- Clint Halftown, Chief
- Vernon Isaac, Chief
- Timothy Two Guns

Cherokee Nation, OK
- Bill John Baker, Principal Chief

Citizen Potawatomi Nation, Oklahoma, OK
- John A. Barrett, Jr., Chairman

Delaware Nation, OK
- Cleanan Watkins, Acting President
- Kerry Holton, Tribal President
- Tamara Francis, NAGRAP Contact
- Nekole Alligood
- Jason Ross

Delaware Tribe of Indians, OK
- Paula Pechonick, Chief

Delaware Tribe of Indians, KS
- Brice Obermeyer

Eastern Band of Cherokee Indians, NC
- Russell Townsend

Native American Groups (continued)

Eastern Shawnee Tribe of Oklahoma, MO
Glenna J. Wallace, Chief
Robin Dushane, Cultural Preservation Officer
Forest County Potawatomi Community, Wisconsin, WI
Harold Frank, Chairman
Miami Tribe of Oklahoma, OK
Douglas G. Lankford, Chief
George Strack, Tribal Historic Preservation Officer
Oneida Indian Nation, NY
Jesse Bergevin, Historian
Raymond Halbritter, Nation Representative
Oneida Nation of Wisconsin, WI
Cristina Danforth, Chairwoman
Corina Williams
Oneida Tribe of Indians of Wisconsin, WI
Edward Delgado, Chairman
Onondaga Nation, NY
Irving Powless, Jr., Chief
Tony Gonyea, Faithkeeper
Ottawa Tribe of Oklahoma, OK
Ethel E. Cook, Chief
Peoria Tribe of Oklahoma, OK
John P. Froman, Chief
Cynthia Stacy, NAGRPA Contact
Seneca Nation of Indians, NY
Beverly Cook, President
Melissa Bach
Scott Abrams
Seneca-Cayuga Tribe of Oklahoma, OK
LeRoy Howard, Chief
Paul Barton, Historic Preservation Officer
Shawnee Tribe of Oklahoma, OK
Carol Butler, Absentee
Joseph Blanchard, Absentee
Ron Sparkman, Chairman
Kim Jumper, THPO
St. Regis Mohawk Tribe, NY
Randy Hart, Chief
Arnold Printup, Historic Preservation Officer
Stockbridge-Munsee Band of the Mohican Nation, Wisconsin, WI
Robert Chicks, Tribal President
Sherry White
Tonawanda Band of Seneca Indians, NY
Roger Hill, Chief
Tonawanda Seneca Nation, NY
Darwin Hill, Chief
Turtle Mountain Band of Chippewa Indians of North Dakota, ND
Richard McCloud, Chairman
Tuscarora Nation, NY
Leo R. Henry, Chief
Bryan Printup
United Keetoowah Band of Cherokee Indians, OK
George Wickliffee, Chief
Lisa Stopp, NAGRPA Contact
Wyandotte Nation, OK
Billy Firend, Chief
Laura Misita, Land Administrator

Schools

Board of Education of the Berne Union Local School District
Board of Education of the Mount Hope School

Libraries

Briggs Lawrence County Public Library, South Point Branch
Caldwell Public Library
Fairfield County District Library
Fairfield County District Library, Bremen Branch
Herbert Wescoat Memorial Library
John McIntire Muskingum County Library
Kate Love Simpson Morgan County Library
Logan-Hocking County District Library
Menifee County Public Library
Monroe County Public Library
Montgomery County Library
Muskingum County Library, Roseville Branch
Oak Hill Public Library
Perry County District Library, Main Branch
Perry County District Library, Crooksville Branch
Perry County District Library, Junction City Branch
Ceredo-Kenova Public Library
Moundsville-Marshall County Public Library

Organizations

Church-Christ Temple Church Inc.
Cornerstone Family Services of West Virginia LLC
East Sunsbury Baptist Church
The Evangelistical Lutheran Church of Saint James
First Community Church of Columbus
Fork Ridge Christian Church
Hide-A-Way Hills Club
Holiness Community Church
M E Church
Marion Township Trustees
Mount Hope Cemetery
The Northern Wayne County Public Service District
Ohio Valley Conservation Coalition
St. Matthew Evangelical Lutheran Church
Sugar Grove Methodist Church
Village of Sugar Grove, Sugar Grove Cemetery
Wheeling Creek Water Shed Commission
Wilson Willis Cemetery

Companies

A. P. Green Industries Inc.
AEP
Appalachia Ohio Alliance
Appalachian Power Company
B&N Coal
Bennett Candace
Bolton Properties Limited
Bowmore LLC
Bruce Family Trees LLC
Buck Elain, Sayers Investment Co.
CCLC Partners LLC
Central Kentucky Lodging, Inc
Ceredo Corp.
Chesapeake & Ohio Railway Co.
Cheyenne Farms LLC
CNX Land Resources Inc.
CNX Land, LLC.
Columbia Gas Transmission Corp
CONSOL / Pennsylvania Coal Company, LLC
Consolidation Coal Company
Continental Real Estate Company
CRCH-I, LLC
Crow Farms, FLP
Crown Castle
CSX Transportation, Inc.
Daft Family Farms
District 2 W.V. DOT Permits (Attn: Judy Murphy)
Drake & Moore Farms, LLC

Companies (continued)

DuPont Energy Coal Holding Inc.
DW Realty, LTD
E & D Assets Ltd.
Elaine Sayers, Sayers-Bolton
Erickson Huff Tool & Die Corp
Eureka Hunter Pipeline LLC
Five Starr Farms LLC
Fornaro Pietro Trust
Franklin Real Estate Company
Genesee & Wyoming Railroad Services Inc.
Global Signal Acquisitions IV LLC.
Gramps Land Company, LLC
Guernsey County DMV, D&G Bridge Co.
Hirams Estate Family LTD LLP
Hocking Hills Shambhala LLC
Holmes Woodland Inc.
Hydrocarbon Holdings Ltd.
Jefferson Gas, LLC
JPM Properties LLC
Kanawha River Terminals Inc.
Knowton Wilmer B., Blessed Acres Family Ltd Partnership
KTR Farms, LLC
KVKS Corporation
Lawson Real Estate
Link Trucking Co
Lucas John P. & Sally O.
Mark West Liberty Midstream & Resources LLC
Marshall County PSD # 4
McElroy Coal Company
Mike Ross, INC.
Muetzel Family Partnership
Muskingum River Gravel Co.
Norfolk Southern Railroad
Northwood Energy Corp
Old Man's Cave Chalets
Old Man's Cave General Store
Perry Acres Inc.
Rushcreek Valley Farms, Inc.
Sanford Farms, LLC
The Scioto Land Company, LLC
SE Hunting & Fishing Inc.
Shaw-Davidson Inc.
Smith Family Farms
T & D Properties, Ltd.
Tennessee Gas Transmission
Texas Eastern
The Clarence Cook Trust
The Federal National Mortgage Association
Thompson Cabins LLC.
Tri State Reclamation
Watters Properties
Whitey's Wood Service
Williams Energy
Williams Ohio Valley Midstream LLC

Intervenors

Anadarko Energy Services Company
Atmos Energy Marketing, LLC
Calpine Energy Services
Chevron U.S.A., Inc.
Conoco Phillips Company
Cross Timbers Energy Services Inc.
Direct Energy Business Marketing, LLC
Duke Energy Kentucky, Inc.
Emens & Wolper Law Firm CO., LPA, Ohio Landowners
Exelon Corporation
Goldman & Braunstein, Ohio Landowners
Independent Oil & Gas Association of West Virginia
Interstate Gas Supply, Inc.
National Fuel Gas Distribution Corporation
National Grid Gas Delivery Company
New Jersey Natural Gas Company
New York State Electric & Gas Corporation

Intervenors (continued)

NiSource Distribution Companies
NJR Energy Services Company
The Ohio Farm Bureau Federation, Inc.
Orange and Rockland Utilities, Inc.
Peoples TWP, LLC
Piedmont Natural Gas Company, Inc.
PSEG Energy Resources & Trade, LLC
Public Service Company of North Carolina
Range Resources Appalachia, LLC
Rover Pipeline, LLC
Roy and Marjorie Waits
Sequent Energy Management, L.P.
Shell Energy North America U.S., L.P.
SWEPI L.P.
UGI Central Penn Gas, Inc.
UGI Penn Natural Gas, Inc.
UGI Utilities, Inc.
United States Gypsum Company
Vectren Energy Delivery of Ohio, Inc.
Washington Gas Light Company

Individuals

Deborah Aberegg, OH
Michael Aberegg, Sr., OH
Philip M Ackerman, OH
Richard & Angela Ackley, OH
William Acord, WV
John Adams, OH
Elizabeth Amburgey Adkins, KY
Kathleen M Adkins, OH
Kenneth Adkins, WV
Kenneth & Frances Adkins, WV
Rick Ahle, OH
Toby & Judy Ailes, OH
Claudia R. Akin, OH
Nidal & Michelle Albasha, OH
Lila Gene Allen, OH
  Allen Family Trust
Jesse Allen, OH
Kenny Allen, OH
Thomas Allen, WV
Paul Allen, Jr., WV
Ben F. & Mable Ellen Allman, WV
Andrew J. Amburgey, KY
Donald & Marcia Amburgey, KY
J.B. & Geraldine Amburgey, KY
Steven B. & Kris Amburgey, NM
Beverly Anderson, OH
Chad Anderson, OH
Donna & Leroy Anderson, WV
John Anderson, WV
Keith Anderson, OH
Lawrence Eugune Anderson, WV
Rhonda Anderson, WV
Bradley Andrews, OH
John & Debora Angle, OH
Richard & Angela Angles, OH
Frank C. & Linda Applegate, OH
Justin Archer, OH
Thomas Archer, OH
Tom Archer, OH
Ed Armstrong, OH
Wendy J. Arnold & Gary L. Nolan, III, OH
Lloyd & Judith Arnold, OH
Mike Arter, OH
Tony Ashbaugh, OH
Terry & Jody Ashby, WV
Harry S. Jr. & Ricilyn S. Aston, WV
Linda Aston, WV
Mary Margaret Aston, WV
Lewis Aston, Jr., WV
Floyd & Martha Atkinson, OH
John & Alice Ayers, OH
William Ayers, OH
James Bable, OH
Gary R. & Beverly Back, KY
Anthony & Alice Back, KY

Individuals (continued)

Melissa & Scotty Back, KY
Jay Bailey, WV
Angela & James Baker, OH
Garold Baker, OH
Matthew Baker, OH
Frederick & Deborah Bakies, OH
Marvin & E. Jean Baldridge, OH
Bernard Baldy, OH
James & Kathy Ballard, KY
Lillie Banfield, KY
Renne Crow & David Barker, WV
Bennie R. & George A. Barner, OH
Robert & Blanche Barner, OH
David Bradley Barnes, KY
Larry Dexter & Zella Barnes, KY
Steven Earl Barnes, KY
Joanne Barnett, OH
Nancy Barrett, OH
Danny & Vicki Basford, OH
Michael & Tammie Bashore, OH
Ronald & Sarah Bates, OH
Connie Bateson-Jennings, OH
Gary & Marjorie Baumberger, OH
Greg & Nancy Baumberger, OH
Ralph Beatty, OH
Don Beaverson, OH
Gary & Kathy Beddow, OH
Louis H. Bedford & Donna J. Pittman, OH
Donna & Louis Bedford, OH
Carl Bell, WV
Carl L. Bell, Et Ux, WV
Peggy Bentley, OH
David Beveridge, WV
Gregory Biedenbach, OH
Stephen & Susan A Biedenbach, OH
David Bischoff, OH
Gary & Brenda Black, WV
Sandra Black, WV
Earl Blackstone, OH
Herman W. & Evelyn N. Blake, WV
Brad M. & Amanda J. Blake, WV
Loye Blake, WV
Mary Blake, WV
Loye Alfred Blake, Et Ux, WV
Mark & Judith Blazek, OH
Robert Bledsoe, OH
Melissa Blevins, KY
Shirley Blevins, OH
Larry & Kimberly Blosser, OH
Sharon K. Blosser, OH
Geoffrey Blossom, OH
James Bobo, OH
Michael S. Bogard & Cyndi Leasure, WV
Donald & Michael D. Bohonak, PA
Mike Boley, OH
David & Lois Bonnoront, OH
Albert Bowen, WV
Frederick & Pamela Bradford, GA
Sam Brady, OH
Thomas & Tonya Brady, WV
Allen & Ann Brand, OH
William & Sharon Brannon, OH
Susan Brewster, OH
Donald & Beth Bridgeman, OH
James & Linda Britton, OH
Dolores Broadstone, OH
Dennis & Tina Brooks, OH
Josh Brooks, OH
Tina Brooks, OH
Robert Brotherton, OH
James & Susanne Brown, OH
Joshua Brown, WV
Kady Browning, WV
John Browning, OH
Kenneth & Leonta Browning, WV
W. Carroll Browning, WV
Joe Brubach, OH
Kirk & Cheryl Bruce, OH

Individuals (continued)

Robert Bruce, OH
Wesley R. Bryan & Wesley R. Bryan, II, OH
John Bungard, Jr., WV
Timothy Burch, OH
Robin & Marsha Burkes, WV
Kenneth Burkhart, OH
Letha & Brian Burrell, OH
Robert Burton, WV
Thomas & Timothy Burton, OH
Kenneth & Jeri Bush, WV
Shawn Bush, WV
Dennis P. Cadmus, WV
Elizabeth Ann Cain, WV
Martin & Lois Cain, OH
Timothy & Denise Calhoun, WV
Toney & Pamela Calhoun, WV
Christopher Campbell & Michael Dawson, NY
Michael & Patricia Campbell, OH
Richard Campbell, OH
William Allison Campbell, PA
Kenton Cannon, OH
Dennis Canter, OH
Wanda A. Canterberry & Myra Lynn Burt, OH
Joann Canterberry, OH
Alberta Carmichael, WV
Donald Wesley Carn, WV
Mrs. Laura Carn, WV
Matthew Carter, KY
Brandy Castro & Josh Brooks, OH
Corbett Caudill, OH
Rudolph Cebula Jr., WV
Sandra D. Chambers, KY
Bill & Cheryl Chandler, OH
James A. Chicwak, OH
Mark Chilcoli, OH
Jennifer Christain, FL
Clayton Christianson, OH
Robert Christopher, WV
Angela Clark, OH
Eric Clark, OH
Floyd Clark, WV
Garett & Jennifer Clark, OH
Garett William & Jennifer Clark, OH
Tim Clark, OH
Twila Clark, OH
Juanita Clark, OH
Trustee Twila Clark, OH
Jeremy Clay, OH
Darin Clendenning, OH
Mary Clutter, OH
H. Coffield, WV
Harold Dale Coffield Et Al, WV
Robert & Jeannette Coffill, OH
Larry Coffman, OH
Connie Coleman, OH
Joe Coleman, OH
Robert & Debra Collins, OH
Anna Lou Combs, FL
Kevin R. Combs, KY
Brent Conkle, WV
Jay Conner, WV
Robert & Rosemary Conner, WV
Roger & Kim Conrad, OH
Thomas James Jr. Conway, FL
Edwin Cooke, PA
James Copley, OH
Charles Copus Jr., OH
Robert Cordanna, OH
Charles Corns, WV
Charles L. Corns, Jr., WV
Mark Cox, WV
William Cox, OH
Charles Coyle, OH
Charles Lee Coyle, OH
David & Patsy Coyle, OH
Dennis Craft, OH
David Craig, OH
Thomas Craighead, OH

Individuals (continued)

Tammy Crawford, OH
Dennis & Pamela Croft, OH
Victor O. Crow, Et Ux, PA
Douglas C. & Sandra L. Crozier, OH
Robert & Jenny Crum, OH
Dale & Mary Cunningham, WV
Betty Dalton, OH
David Dalton, OH
Thomas & Peggy Dalton, OH
Douglas & Brenda Damron, WV
Lola Darnell, OH
Harold Daubenmire, OH
Gary W. & Pamela Daugherty, KY
Jack & Ruth Daugherty, KY
James Daugherty, WV
Raymond Daugherty, Jr., KY
Walter H. & Rhodema G. Daugherty, KY
The Daugherty Estate, KY
William Davidson, OH
Carl Davis, OH
Clyde, Jr. & Pamela G. Davis, KY
Darrell Davis, OH
Gary Davis, OH
Gary & Kristina Davis, OH
Joy Davis, OH
Mark & Kimberly Davis, OH
Timothy A. & Athlene Davis, KY
Craig Davisson, OH
Jerry Day, Et Al, PA
Thomas S. & Michelle Dean
Beverly DeCoster, OH
John Decker, OH
Cheri Delancey, OH
Beverly Delidow, WV
Dan Dempsey, OH
Daryl Dempsey, OH
James & Judith Dennis, OH
Mark Dent, OH
John Detweiller, OH
Mark Devol, OH
Joseph Dick, OH
Lewis Dick, OH
Christopher Dickson, IN
Paul & Sandra Dietrich, OH
Lisle Dill, OH
James Dimitro, OH
The Dingey Family, OH
Gary Dingey, OH
Gary & Debra Dingey, OH
Jeffrey Dingey, OH
Larry & Nancy Dingey, OH
Matthew Dingey, OH
Kevin & Sarah Dixon, WV
Terry & Diane Dodson, OH
James Ronald Dolan, PA
Mary Doty, WV
Cheryl Dowler
Wendell & Judith Duffy, OH
Jeffrey Duke, OH
Charles Dunlap, WV
Larry Dunlap, WV
Michael Dunn, WV
Michael A. Dunn, Et Ux, WV
Esther Durst, OH
Linda Durst, OH
Christopher & Michelle Dye, OH
John & Sharon Ebbert, WV
John Ebbert, Jr. WV
Richard Eberle, OH
James Eberts, OH
Jon Eichelberger, OH
Joan Eddlebblute, OH
Stanley & Judy Edwards, OH
Stanley Sr. & Judy Edwards, OH
Trustee Kerin Edwards, OH
Darin Keith Eggers, OH
Chris Eiben, OH
Tina M. Elkins, KY

Individuals (continued)

Larry & Lorie Ellinger, OH
Robert & Carolyn Ellis, WV
Charles Emery, WV
Charles Edward Emery, WV
John Ensley, OH
Constantine & Toula Evangelinos, OH
Debra & Gary Evans, OH
Tommy & Donna Evans, KY
Charles & Norma Fairchild, OH
Carl Falter, OH
Kenneth & Patricia Farley, OH
Ida Farmer, OH
Lester Farmer, OH
Judith Fergus, Trustee OH
Joseph Ferguson, OH
Richard and Helen Ferguson, OH
Richard Jr. and Susan Ferguson, OH
Beth Fewell-Overmyer, OH
Beth E. Fewell-Overmyer, OH
John Feyko, Jr., FL
Russell E. Jr. & Richard Fish, WV
Dennis Fish, WV
Nelson & Norma Fisher, OH
Timothy & Sharon Fitzpatrick, WV
James Fitzsimmons, WV
Michele K. Flanery, OH
Nelson & Maxine Fletcher, WV
Jeffrey Flickinger, OH
Maria T. Flores, OH
Melza L. Flowers, MI
David Fluharty, OH
Dennis & Debbie Fogle, OH
David Folk, OH
Richard Forshey, WV
Aaron and Marsha Foster, WV
Keith & Joyce Fox, OH
James & Dorothy Frank, PA
Maynard French, OH
Eileen Friday, FL
Charles Friend, WV
Patricia Friend, WV
Charles & Denise Furr, OH
Charles W. Denise C. Furr, OH
Jeffrey Gadd, OH
Dale R. Gallaher, Et Al, OH
Connie Gallaugher, OH
Kathleen Gardner, OH
Wiley R. & Paul Garey, WV
Dave Gates, OH
Carl & Kathleen Geary, OH
Anthony & Abbey Geho, WV
Donna Geho, WV
Lila Gene, OH
Edward Gibson, WV
Richard L. Gillilan, II, OH
Lawrence & Ann Gingerich, OH
Wanda Lee Gittings, WV
Dwain Glover, WV
Gregory & Brenda Goble, OH
Stephan C. & Kathryn S. Good
Jean Goodnite, OH
Ronnie Goodrich, WV
Jeffrey Gorby, OH
David Gordon, OH
Judy M. Gorman (McCutcheon), OH
Gayle Graham, OH
Warren Graham, SC
M. Lynn Graves & James R Copley, OH
Charles Gray, OH
Greg Greenlee, OH
Charles & Sonya Greer, OH
The Grey Family, OH
Karen, John, & Alice Grey, OH
Marty & Cindy Groves, MD
Chris Gruber, OH
Anthony Guarino, OH
Jeffrey Gunn, OH
Daniel H., OH

Individuals (continued)

Patric Habig, OH
Gerhard Haenisch, OH
Roger Haga, OH
Sharon Hahn, OH
Dean Halcomb, OH
Betty Hale, WV
David Hall, OH
John & Adele Hall, OH
Linda A. & Billy G. Hall, KY
Linda Hamilton, WV
Alonta Rae Hamilton-LIFE, WV
Christopher Hannahs, OH
Michelle & Jayne Hannum, OH
Mike Hannum, OH
Brian Hanson, OH
Warren Harbaugh, OH
John A. & Shelly J. Hare, KY
Ellen Harness, WV
Charles Harper, OH
Marcus & Kendra Harper, OH
Wayne & Lydia Harrah, OH
Brad Harris, OH
Jonathan Harrison, OH
Charles Hart & Joseph Panzone, OH
The Hartley Family, WV
Christopher D. & Heather L. Hartley, WV
Lucille M. Hartley, WV
Chuck Hartley, WV
Patricia & Loren Hartley, WV
James & Deborah Hartshorn, OH
Phillip & Iris Hartshorn, OH
Gary L. Harvey, PA
Lindsay M. Kilbarger Harwood, OH
Richard & Barbara Harwood, OH
Shirley A Harwood, OH
Katherine Haselberger, OH
Tom & Cynthia Hatfield, OH
Joseph Haught, WV
Keith E. Haught Et Al, WV
Gerald Hawkins, WV
Gerald & Julie Hawkins, WV
Scott Hayes, OH
William & Evelyn Hayes, OH
Jack Hays, OH
Samuel & Sandra Heater, WV
Keith Hedges, OH
Diann L. & Lloyd F. Helber, OH
Donald & Elizabeth Helber, OH
Sharon Hendershot, OH
Randy Hensley & Paula Degarmo, OH
Daniel & David Hershberger, OH
The Roy Hicks Estate, KY
Bernard Hill, OH
Linda Hill, OH
Terry & Darlene Hill, WV
MaryLou Hinkle, OH
Ralph & Kathy Hinkle, OH
Lou & Rose Ann Hintz, Trustees, OH
Ray Hipsher, OH
James & Suzanne Hiser, OH
Billy & Dorothy Hivnor, OH
John Hivnor, OH
John Hockingberry, OH
Elmer & Shirley Hodge, WV
Mark Hoffman, OH
Dean Holcomb, OH
Elsie Holcomb, OH
Michael & Lou Holcomb, OH
Beth Holdren, OH
John Holdren, OH
Aaron Paul Holdren, Et Ux, PA
Paul & Stephen Holiday, OH
Jerry & Karla Hollingshead, OH
Ralph & Robin Holmes, WV
Bernard & Roxann Holstine, WV
Ronald & Alma Hoopes, OH
Larry Hoover, OH
Sarah Hoover, OH

Individuals (continued)

Lucas & Lynn Horn, OH
William Horn, OH
David & Jennifer Howard, OH
Lemon Howard, OH
Russell & Polly Howdyshell, OH
Arthur Howell, OH
John & Audra Hoy, OH
Ralph D. & Sally Jane Hoyt, WV
Jack & Jane Hrinko, OH
Scott Huch, OH
Brandy Jo & Doulas J. Hudson, WV
Michael Hufford, OH
James Huggins, OH
Timothy & Rhonda Huggins, WV
Huggins Kenneth R., Gump Debra
Jack Shephard Huggins Jr., Et Al, WV
Alicia Hughes, OH
Brian & Ernest Hughes, OH
Jennifer Hughes, OH
John Hughes, OH
David Hume, OH
Curtis & Mary Hunt, OH
Sam & Rhonda L. Hunt, KY
Jeffery & Sharon Hunter, OH
David Hurd, OH
John & Geraldi Hussell, WV
John & Susan Huston, OH
Martin & Barbara Hutchins, OH
Stephanie & Hughes E. Hutchinson, OH
Kathleen Hutchinson, OH
Revocable Trust Julie Ann Hutchinson, WV
Donna Hyme, OH
James & Gloria Imler, OH
Loven Isom, GA
Jennie Jackson, WV
James Jackson, Jr., WV
Marsha James, OH
Rondal & Kimberly Jeffers, OH
Griffen Jenkins, OH
Dan Jennings, OH
Larry & Bernadine Jennings, OH
Allen Johnson, OH
Frances & James Johnson, WV
James B. & Elisha Johnson, KY
Ronald R. Johnson, WV
William & Bridgett Johnson, WV
Kimberly Johnston, OH
Carl Jones, OH
James Jones, WV
James Jones, OH
Lester & Lisa Jones, OH
Sharon Jones, OH
Sidney & Freda Jones, WV
Travis Journey, OH
Eunice Jurgensmier, OH
Marianne Jurkowitz, OH
Steve L & Paula Kaiser, OH
Dennis & Cheryl Kallimanis, OH
James & Kim Kallimanis, OH
Neil & Susan Kammiller, OH
Nancy & Karen Kampe, OH
Sherman Kapp, OH
Kaleb Kash, KY
Albert Kazemka, WV
Doyle & Lisa Keeton, KY
The Kessler Family, OH
Surv Patrick, Jeffrey A. & Tangie M Kessler, OH
Roger Keyser, WV
Kimberly C. Kidd, WV
Scott Kiene, OH
Scott & Amy Kiene, OH
Larry & Carolyn Kienzle, OH
James Kilbarger, OH
Blake Kilburn, OH
Bryan Kilburn, OH
Donald & Mary Kilburn, OH
Debra Kindelberger, OH

Individuals (continued)

Thomas J. King, KY
John David Kinney, WV
Mark D. Kinney, WV
David L. Kinney, Et Al, WV
Vernon Kirkbride, OH
Kevin & Bryant Joseph A. Kiser, OH
George R. Kisner, Et Ux, WV
Naaman T. & Susan A. H&W
Kitchen/Steinwender, OH
Philip & Deborah Kittle, WV
Philip Alan & Deborah Kay Kittle, WV
Scott Kitzmiller, OH
Charles & Judy Kline, OH
Toni Kline, OH
Jessica Klingelhafer, OH
Wilmer Knowller, OH
Mark & Debbie Koehler, OH
Larry Kornmiller, OH
Larry & Bradley Kornmiller, OH
Timothy Kornmiller, OH
Steven & Debra Kramer, OH
Hubert & Andrea Kuhn, WV
David V & Kelly Kunkler, OH
Jeffrey & Paulette Kunkler, OH
John & Sylvia Kutis, WV
Kent Laforme, WV
David Landefeld, OH
Kathi & Gilbert Larrick, OH
Randall G. Larrick, OH
William Larrick, OH
Elizabeth Leach, OH
Donald Walters Leedy, OH
James Legg, WV
Jeffrey Legg, WV
Timothy Lehman, OH
Rob Leonard, OH
Charles & Deborah Lewis, WV
Mary Lewis & Judith Wheeler, OH
Scott Lewis, OH
Jerry & Carolyn Lilley, WV
Jerry Ivan & Carolyn Lilley, WV
Pauline Lilley, WV
Marvin Lindamood, OH
James & Karen Lipp, OH
James Michael & Khristina Little, KY
Daniel & Jeannette Longworth, WV
Graham Longworth, Jr., WV
Alex Loudermilk, WV
Charles & Paula Love, OH
John & Sally Lucas, OH
Dale Lund, IA
Jane & Dave Lycan, WV
James R. Lyons Et Ux, WV
Eldon & Loretta Mace, OH
Darin & Megan Macke, OH
Ginger Mahan, WV
Mary Kathryn Malay, NC
Karyne & Michael Mallinak, OH
Chris Maness, OH
Terry A. Maness, KY
Timothy W. & Tammy B. Maness, KY
April Melton Manley, KY
Helen Manuel, OH
Karen Marchand, OH
James Marcus (Ball), OH
Keefe Margirene, OH
William & Valeria Marske, OH
The Teddy & Jean Martin Estate, KY
Belinda & Ronald Martindill, OH
Zolar & Sarah Marus, OH
Harold Mathias, OH
Kenneth Mathias, OH
William & Sandra Mauck, OH
Arthur & Barbara Maynard, WV
Cory & Amanda Maynard, WV
John Maynard, WV
Teresa Mazgay, OH
Jack McCleery, OH

Individuals (continued)

Patricia McClintock, WV
William & Terry McClintock, WV
Rodney McClur, WV
Aluah Thomas McCoy, KY
Charlotte McCoy, OH
Robert McCoy, WV
Shirley & Sharon McCoy, KY
Roger D. McCracken, WV
Ronald & Kimberly McCrady, OH
Dave McDonald, OH
John Robert McDonough, WV
Thomas McFall, OH
Randy McGuire, OH
Robert Gregory McGuire, Et Ux, WV
Marvin McMasters, WV
Mary McMillan, PA
Bobby Meadows, OH
Keith & Kara Mendenhall, OH
Manford Merckle, OH
Kenneth & Misty Merinar, WV
Clifford Merinar, Jr., WV
Vincent A. & Carmelinda Messina, NJ
Robert & Deanna Meyer, OH
Charles & Connie Meyer, OH
Charles & Robert Meyer, OH
Charles Meyer, Jr., OH
Raymond & Dorothy Midcap, WV
Charles & Lucille Miller, OH
Debra Miller, WV
Edwin & Kim Miller, WV
Brian K Milliken, FL
Heidi & Troy Mills, OH
Mark & Terri Milosavljevic, OH
Dean & Darla Minamyer, OH
Phillip Miner, WV
George F. Minor, WV
James Mizik, OH
Jeremy Mizik, OH
Joey Moats, OH
Bryan Moffatt, OH
Calvin Moninger, WV
Danny Moore, OH
Dennis Moore, OH
Norman & Debra Moore, OH
Shawn & Bryan Moreland, OH
Ramon & Deborah Morris, OH
James Morrison, WV
Jessica Morrison, WV
Steve & Stacey Morrisson, WV
James & Charlotte Mowery, OH
Martin & Mary Margaret Mudrak, OH
Cathy Mullins, KY
Sheila Mullins, KY
Will Mullins, KY
Craig & Carol Murdock, OH
John & Sandra Murphy, WV
Arthur & Deborah Music, OH
Joshua Myers, WV
Tyler Nalley, OH
Julie Nalley, OH
Howard Nau, OH
Rodney Newkirk, OH
Richard & Karen Newlon, OH
Howard & Beverly Newman, OH
Robert & Tamara Nichols, OH
Harold Nihiser, OH
Jacob & Angel Nihiser, OH
Thomas Niple, OH
Kevin & Caroline Niswonger, OH
Mike Niteswanger, OH
Gary Nolan, III, WV
Josh Norris, OH
Pearl Norris, OH
Megan Nungester, OH
Steven & Lisa Nutter, OH
Steven & Claudia Nye, OH
Danford & Derborah O'Brian, WV
Michael L. O'Donnell, WV

Individuals (continued)

Garret D. O'Neil, WV
Steven &Mindy Osborn, OH
Charles Owen, OH
Charles & Kathryn Owen, OH
David Owen, OH
Charles Jr. & Kathryn Owen, OH
Charles Owens, OH
Mark S. & Lois L. Pack, OH
Jeffrey Paczewski, OH
Albert Paczewski, Jr., WV
Charles Paine, OH
Dale & Lisa Parker, OH
John Parker, WV
Steven M. Parker, OH
Joseph R. Parks, Et Ux,WV
David & Brenda Parmiter, OH
Lloyd & Celia Parmiter, AZ
Nancy Parson, WV
Executrix of the Estate of Alberta Burge Carmichael
Crystal Gayle & Keelan B. Patrick, KY
Vivian Paulus, OH
Asti Payne, OH
Ronald Payne, OH
Douglas Pegg, WV
Marie Pendelton, OH
Francis J. & Margaret M. Penotte, OH
Joshua G. Perry, OH
Wetzel & Rhonda Perry, WV
Kermit Persinger, WV
Lionel Persinger, WV
Robert Petelin, OH
Rudy & Nancy Peters, WV
James & Desiree Peters, OH
Earl Douglas Peyton, KY
Larry Amon Peyton, KY
Larry Joe Peyton, KY
Len Pida, WV
Garry Pierce, OH
Franklin Pierson, WV
Caroline Plank, OH
Marvin Plank, OH
Randall Plant, OH
Thomas Platt, OH
Clarence T. & Robert E. Pletcher, OH
David L. & Kimberly T. Poling, WV
Ronald & Darrin Potts, OH
Daniel L Powell, OH
Robert & Denise Powell, OH
Traci Powell, OH
Mark & Beth Powers, OH
Tony and Phyllis Poynter, KY
Minnie C. Prascik, WV
Virgil & Robin Pratt, OH
Burness Pride, OH
Betty Primer, OH
Charles Pritsel, OH
Surv Charles E. & Wendy J. Pritsel, OH
Kevin Ragsdale, OH
Terry Raines, WV
Darron Rambo, OH
Joseph Ravoira, Jr., Et Al, PA
Dave Ray, OH
Yolanda G. & Sam Rayburn, KY
Thomas L. Rayner, OH
James Redd, WV
Norman Redd, OH
Larry D. Reed, KY
Milly Reed, KY
Vernon & Susan Reed, OH
Sandra K. & Richard P. Reeves, OH
Sandy Reichley, OH
J & S Reusser, OH
William Rex, OH
James & Kathy Reynolds, OH
David & Penny Rheinscheld, OH
Jack & Joanna Rice, PA
Sidney Richardson, OH

Individuals (continued)

Mark Riegel, OH
Clyde Riggle, WV
Mable Riggle, WV
Nicholas Ray Riggle, WV
Nicole Riggle, WV
Robert Riggle, WV
Omar Rine, WV
Vernie Rine, WV
Omar Rine Estate, WV
Ellis V. & Wanda P. Rine, WV
Mark T. & Rickilyn R. Roberts, WV
Ronald & Priscilla Robinette, KY
Mary Beth Robinson, OH
Jerry & Linda Rockwell, WV
Donald Rogerson, Sr., WV
Clinton & Sarah Rossell, OH
Jerry Rossiter, OH
Harry Roush, WV
Herman & Judith Rowe, WV
Eric Rowland, OH
Gary & Nancy Rubel, FL
Gary & Nancy Rubel, OH
Stephen Rubel, OH
Jessie Ruckman, WV
Linda & Joseph Rush, WV
Linda M. & Joseph L. Rush, Et Al, WV
John Russell, WV
Matt Russell, OH
Larry Rutan, NC
Jeffrey & Angela Saffles, OH
Launfull Salyer, Jr., OH
Margaret Salyers, WV
James Kevin Sampson, WV
Elroy E. & Trisha L. Sanner, WV
Jeffrey Santilli, OH
Bruce & Stacey Sater, OH
Paul Sater, OH
Randy Sater, IL
Judy Sato, WV
Robert & Judy Sato, WV
Anthony A. & Cheryl F. Saylor, OH
Ruby Schalting, OH
Albert Jr. and Renae Scheiderer, KY
Benjamin Schell, OH
Randall Schmidt, WV
Mark & Marilyn Schneider, OH
Gary Scott, WV
Mary Scott, OH
Philip Scott, OH
John Sebastian, KY
Evelyn Seifert, WV
Ronald & Natalie Seitz, OH
Cindy Shaner, OH
Marsh Shanes, OH
Gary & Connie Sharkey, OH
Paul, Gary & Janet Sharkey, OH
John Sharp, OH
Robert Sharp, OH
Ronald Sharrett, OH
Paul & Debra Shaw, OH
Trust W & J. Shaw, OH
William Shaw, OH
Yancy Shaw, OH
George Shaw, PA
Charles Sheedy, WV
Charles R. Jr. & Tracy Sheedy, WV
Charles Sheedy, Sr., WV
Clark & Cathy Sheets, OH
Nellie & John Sheets, OH
Jackie & Ginger Shephard, WV
Timothy Shrewmaker, KY
Robert & Victoria Shilot, KY
David & Nicole Shipman, WV
Christopher Shippy, OH
Adam Shook, OH
Ronald & Carol Shook, OH
Clyde Shriner, WV
Floyd Shriner, OH

Individuals (continued)

Konrad Shriner, OH
Nelson Shull, OH
Homer, Jr. & Janis Shull, OH
Wayne & Lisa Shumaker, OH
Patricia Silberhorn, OH
Brian G. Sill, OH
Scott & Chris Sills, OH
Patricia Simmons, OH
Gene Simms, WV
Amos & Bonna Sims, OH
Jonas Slabaugh, OH
John Slater, OH
Hershall Slone, KY
Betty Smallwood, KY
Christopher Smith, WV
Phillip Smith, OH
Ralph Smith, OH
Scott Smith, WV
David & Melissa Smith, OH
Harry & Christine Smith, OH
Phillip & Gina Smith, OH
Richard S. & Beth E. Smith, OH
Tara J. Smith, WV
Todd Smittle, OH
Sandra Snider, OH
Vernon Sorg, OH
Hughes Vernon & Frances Sorg, OH
George Spangler, OH
Pamela Sparkman, OH
Brad Spencer, OH
Larry L. Spencer, Et Ux, WV
Jerry Spohn, OH
Randy Spradling, WV
William & Christina Squires, OH
Robert & Lisa Stack, OH
Jason Stacy, OH
Jesse & Lindsay Stalder, OH
Anthony & Karen Stalford, OH
Kevin & Jill Stalter, OH
Alan Stam, OH
Roger Stamper, LA
Kenneth L. Standiford, WV
William Standiford, WV
Fred Steele, FL
Kevin & Melanie Steele, WV
Patrick Steele, OH
Jeffrey & Sharon Steese, GA
Jeffrey Lee & Sharon Steese, GA
Bernard & Teresa Steimer, OH
Kylie Steimer-Slivka, OH
Susan Steinwender, OH
Candy & Terry Stephens, OH
Robert & Patricia Sterling, OH
Herbert Stevey, WV
& Murphy Joe Mc & Evis Stewart, WV
Betty Stewart, WV
Matthew Stiers, OH
Brian Still, OH
Alvin Stillwell, WV
Chance Stoak, OH
Honus Stollar, WV
Ronald Stollar, WV
Daniel Storts, OH
Walter W. Streight Jr., Et Ux, WV
The Strope Family, WV
Charles B. Strope, WV
Russell W. & Craig D. Strope, WV
Annette Marie Studer, OH
Pamela K. Sullivan, OH
Donald & Deborah Sutton, OH
Jacqueline Sutton, OH
Leona Marie Et Al Sutton, WV
Walter & Eloise Sutton, OH
Guy Roy Swann, WV
Eugene Swearengin, OH
Brian Sweeney, OH
David M Sweeney, OH
Thomas Sweeney, OH

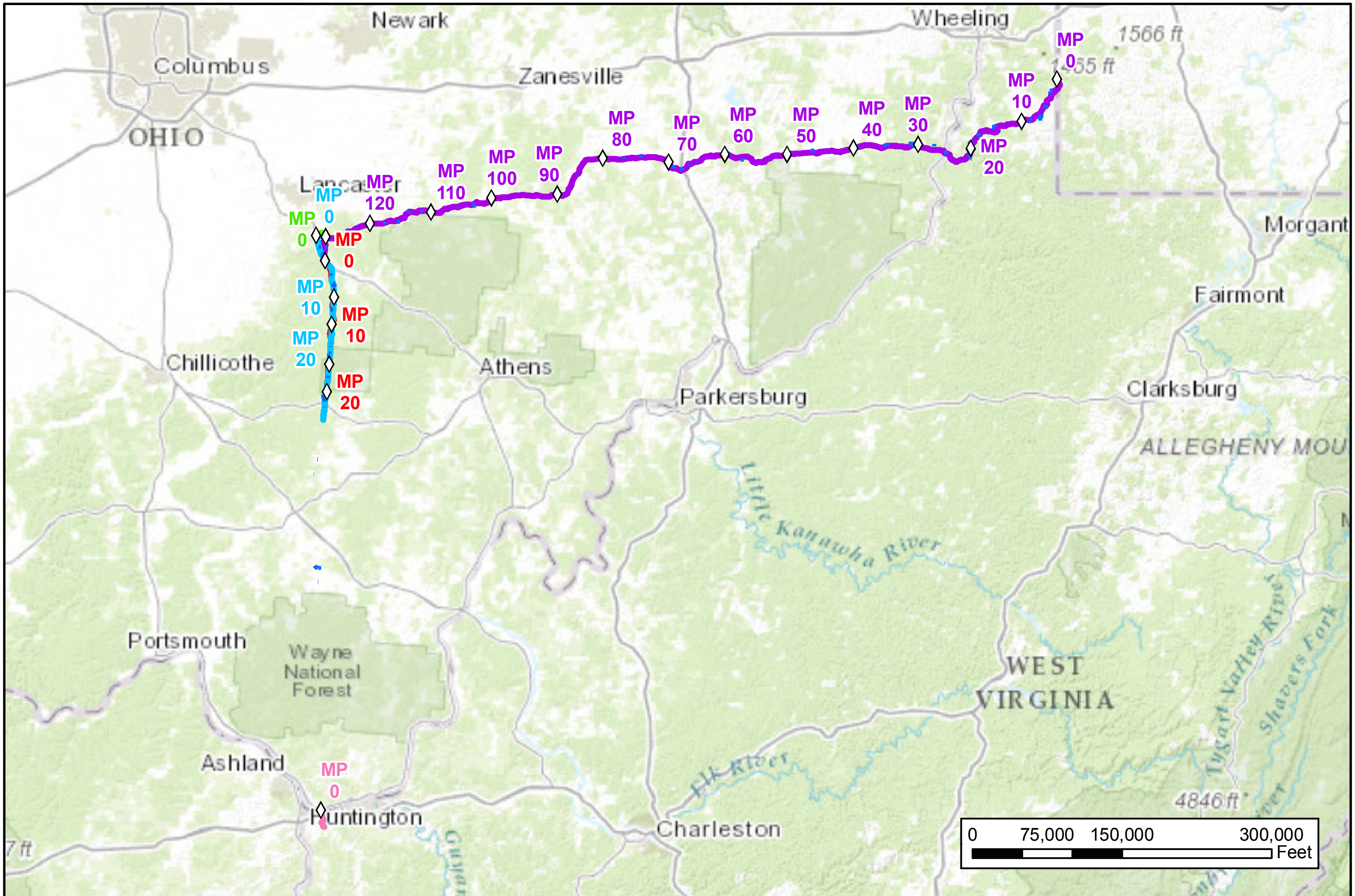
Individuals (continued)

Mark & Kelly Sweet, OH
Scott & Tiffany Tackett, WV
Ron Tank, OH
Jesse & Alisha Taylor, VA
Ashbaugh Brenda Louise & Tony R. Wros. Taylor, OH
Bryan Taylor, OH
John Taylor, OH
John & Judith Taylor, OH
Lacey E. Taylor, OH
Robert Taylor, OH
Kenneth & Deloris Teter, OH
Bill Thomas, KY
Paul & Althea Thomas, WI
William D. Thomas, OH
Ernest & Lisa Thompson, OH
C. Lovina Throckmorton Sr., OH
Marvin, Sr. & Brenda Throckmorton, OH
Brent Tisher, OH
William Toland, WV
Mark Tomblin, WV
Shawn Tomblin, WV
Shawn Tomblin, WV
Randall Trainer, OH
Scott Trekal, OH
Stacy & Sherry Trenner, OH
David & Leona Troyer, OH
Melvin Tucker, OH
Philip & Tina Tucker, OH
Hayden & Carol Tuffs, OH
Wayne M. Turk, WV
Lonnie Tustin, OH
Frank Uhl, OH
Christine Unklesbay, OH
Joseph Urbanek, OH
Selwyn & Lila Vanderpool, WV
Donna M. Varner, PA
Mary Day & William Vest, KY
Kirk & Derek Villaloboz, OH
Liley L. Virgil, PA
Roger Wade, OH
Lorre & John Waers, OH
Roy & Marjorie Waits, OH
Roy & Sandra Waits, OH
Roy A. Waldron, OH
Richard Walker, OH
Richard & Kelly Walker, OH
Tom Walker, OH
Robert & Thelma Wallace, OH
Matthew Wallis, OH
Marlene Walls, OH
Maurice Warner, OH
Donald P. Jr. Wasmuth, WV
Trustee Jeffrey Watson, OH
Dan Way, OH
Kevin & Teresa Weaver, OH
James & Paula Webb, OH
John T. Wehrle, OH
Joseph, James, & Denise Wells, OH
Dave Wertz, OH
Wayne West, Jr., WV
Steven & Vicki Westerman, OH
Mark & Sherry Wheeler, OH
Gilbert & Judith A. Wheeler, OH Subject to the Life Estate of Cheri Delancey
Bruce Whipkey, WV
Jerold Whipkey, WV
John White, WV
Craig White, WV
Charles Albert Whitsberger, II, WV
Karen J. Whitten, OH
Gregg Whittkamper, WV
William F. & Sharon K. Williams, WV
Clyde & Anita Williams, OH
Heath & Laura Williams, OH
Roland Williams, WV
T. Steve Williams, OH
Cary & Trudy Wilson, OK

Individuals (continued)

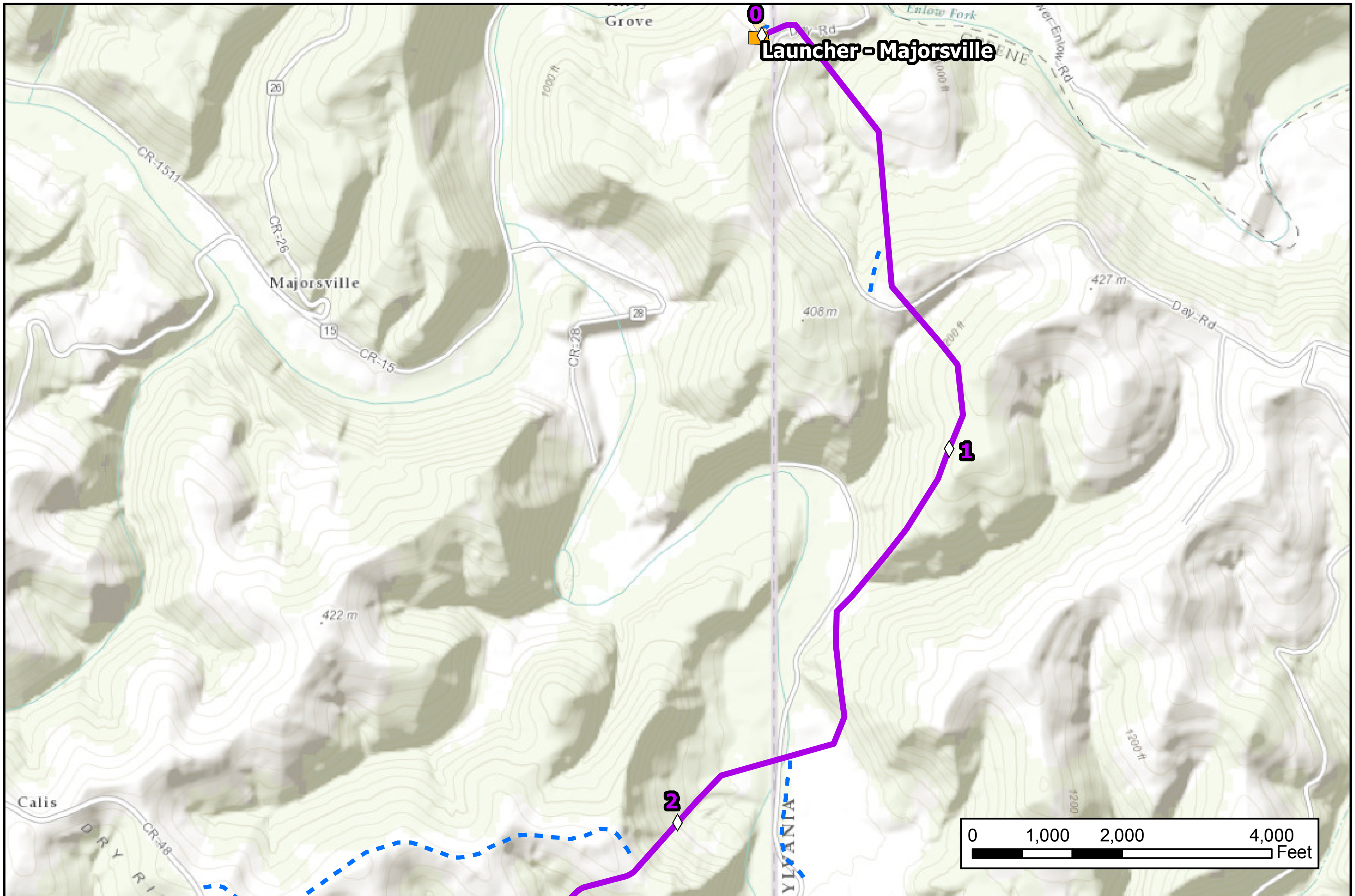
George & Marie Wilson, WV
George W. & Lenora Marie Wilson, WV
Joseph & Mona Wilson, WV
Randy & Lois Wilson, OH
Tim Wilson, OH
Tim & Susan Wilson, OH
Timothy & Susan Wilson, OH
Jeffery & Heather Winchell, OH
Dennis Wingrove, WV
Nancy Winslow, OH
Jon & Christine Wise, OH
Christopher & April Wisecarver, OH
Theodore & Joleen Wiseman, OH
Fred Wittebrook, OH
Neil Wittenbrook, OH
Patricia C. Wobig, Et Al, WV
Crystal and Terry Woltz, OH
Patricia Wood, OH
Aaron Woodard, WV
David S. Woodard, KY
Catherine Woods, OH
Kenneth Woodward, OH
Homer & Anna Woolum, WV
Beth Wright, OH
Ben Wright,OH
Jack Wucinick, OH
Peter & Jodi Wyman, OH
Alvin A. Yoder, OH
Nathan D. Yoder, OH
Gary Yoho, WV
Ronald Lee Yoho, WV
Charles & Judy Yontz, OH
James & Joy Yontz, OH
Hunter Young, OH
Judith Young, OH
Randy & Polly Young, OH
James Zatezalo, OH
Rose Zatezalo, OH
Jerry W. Zien, WV
Robert Zimmerly, OH
Amy Zwick, OH
Francis & Thelma Zwick, OH

APPENDIX B
Project Overview Maps



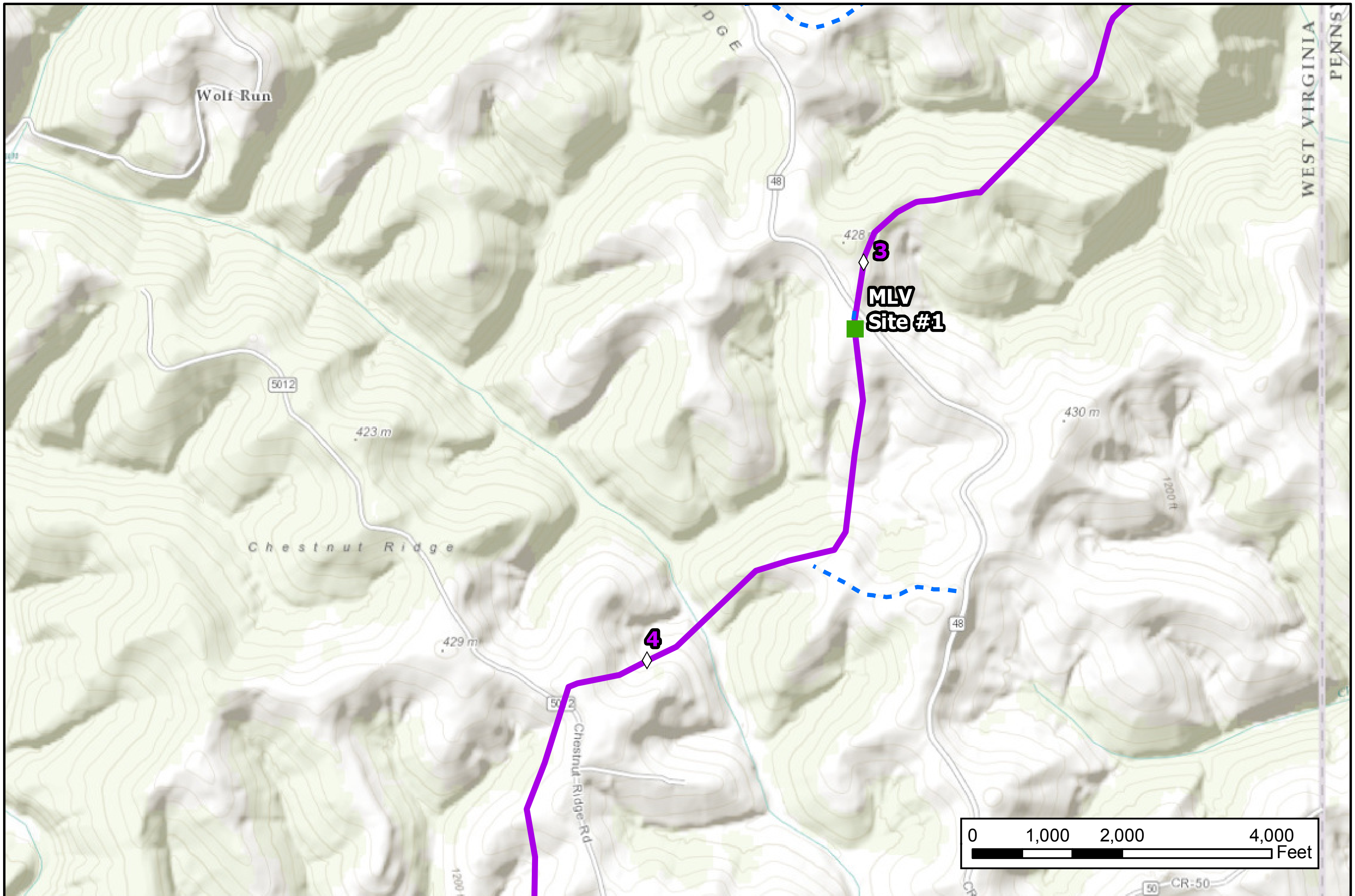
	LEX		Access Road
	LEX1		Suction Line
	R-801 Loop		Permanent Site Facility
	R-801 Loop		Temporary Workspace
	R-501 Abandonment		Pipe Yards
	Main line Valve	◊	Milepost

Appendix B-1
Leach XPress
Project Overview



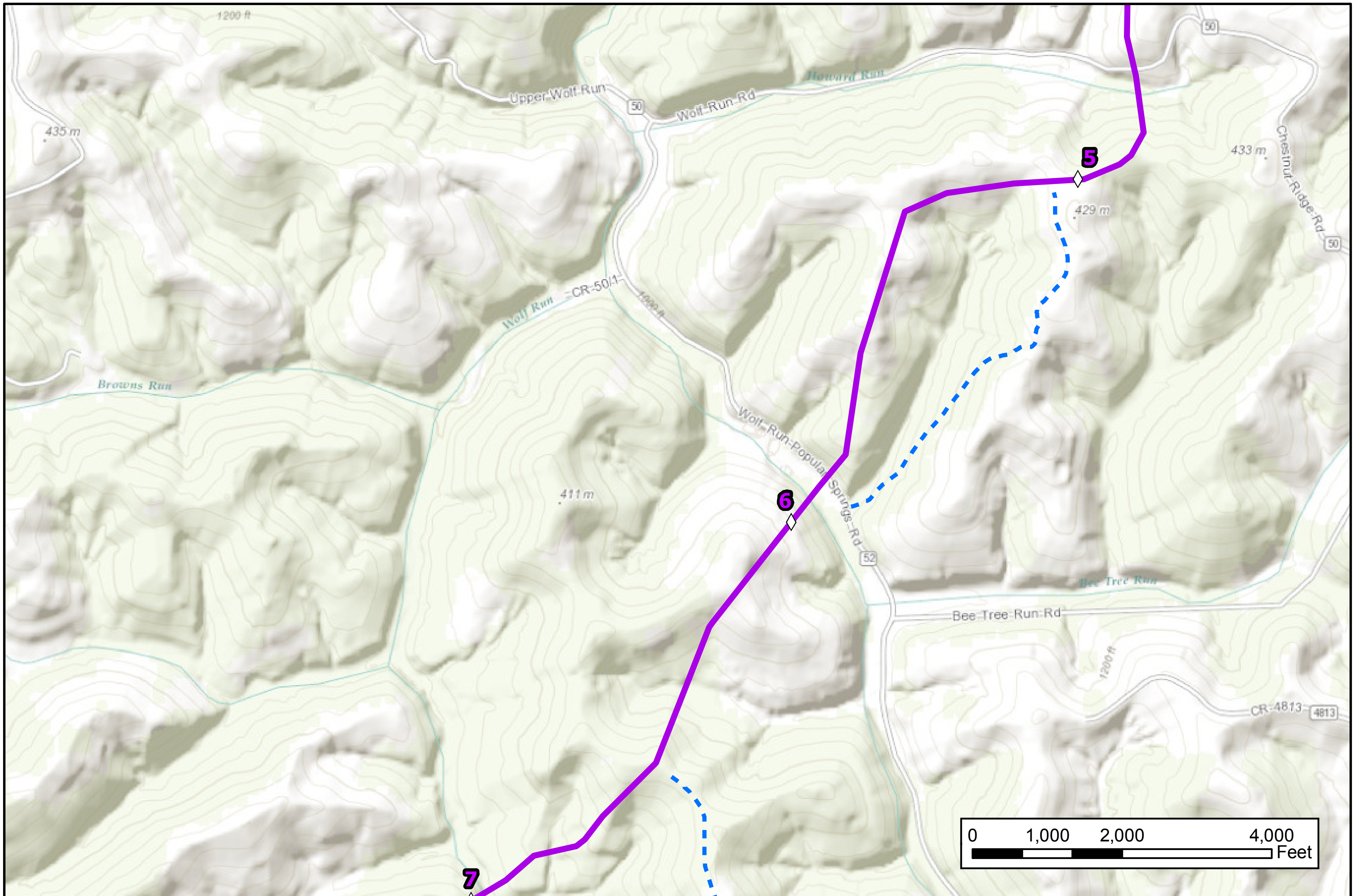
LEX	Access Road
LEX1	Suction Line
R-801 Loop	Permanent Site Facility
R-801 Loop	Temporary Workspace
R-501 Abandonment	Pipe Yards
Main line Valve	Milepost

Appendix B-2
Leach XPress
Project Overview



LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-3
Leach XPress
Project Overview

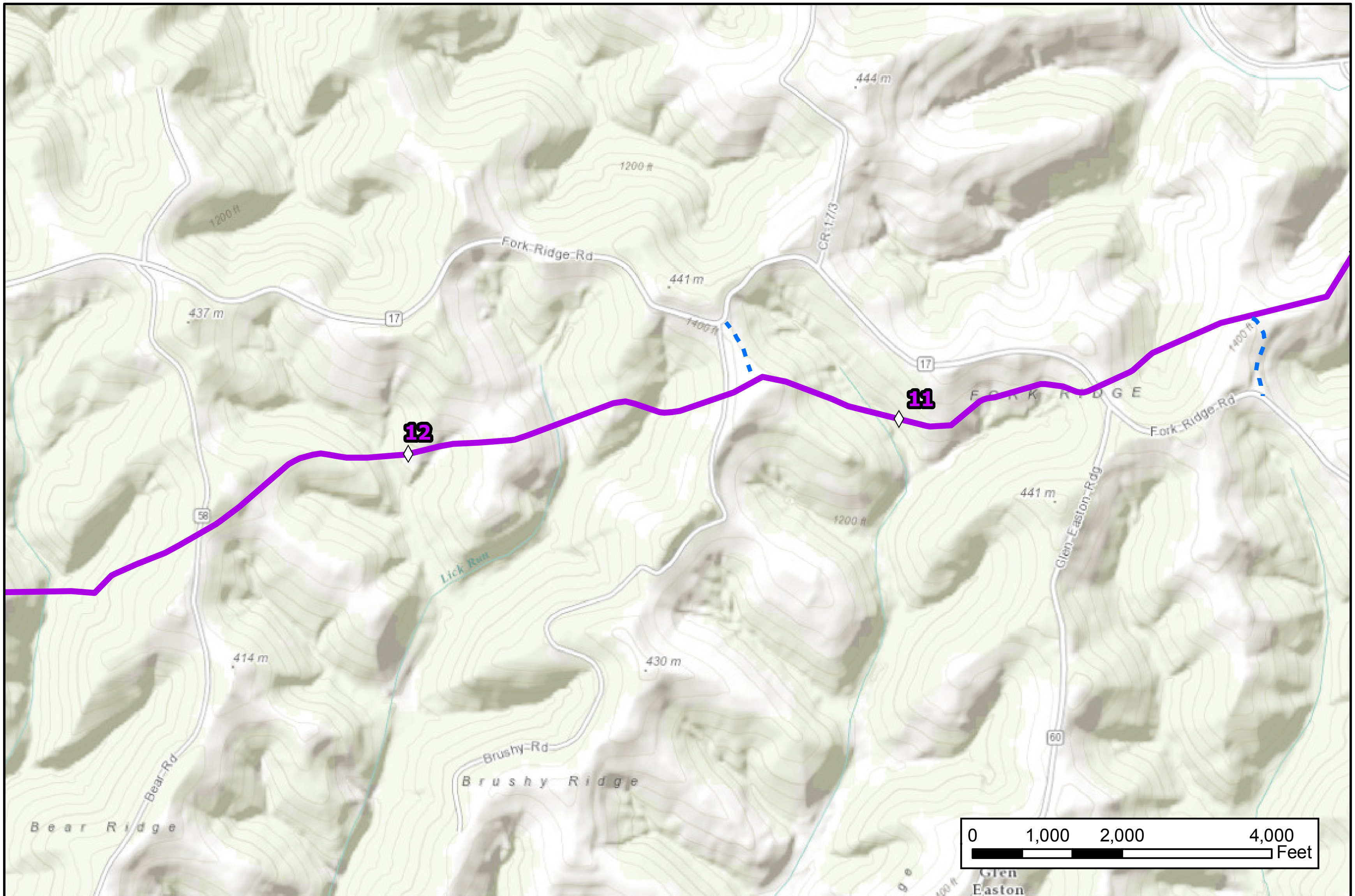


LEX	Access Road
LEX1	Suction Line
R-801 Loop	Permanent Site Facility
R-801 Loop	Temporary Workspace
R-501 Abandonment	Pipe Yards
Main line Valve	Milepost

Appendix B-4
Leach XPress
Project Overview

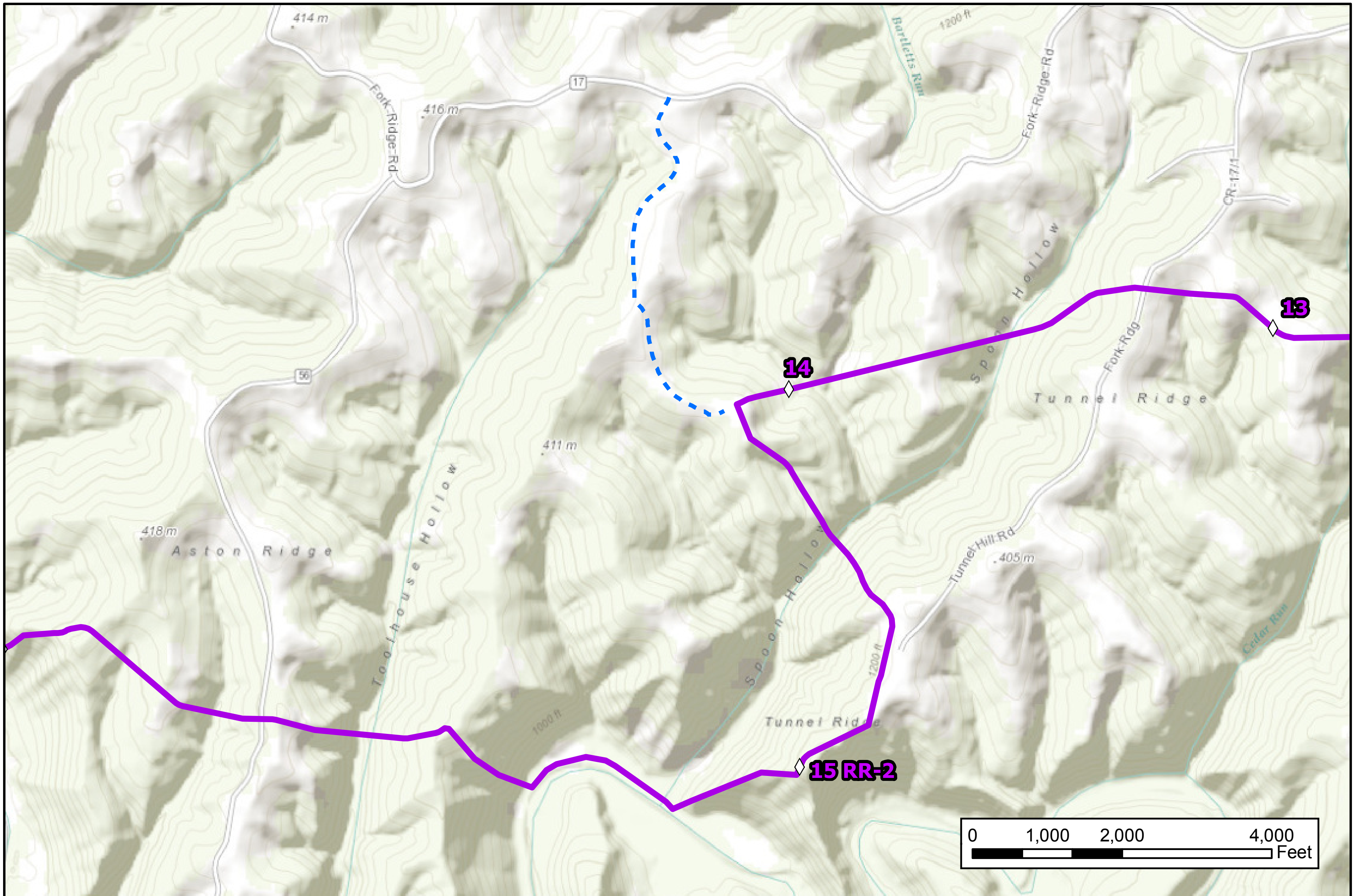
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-5
Leach XPress
Project Overview



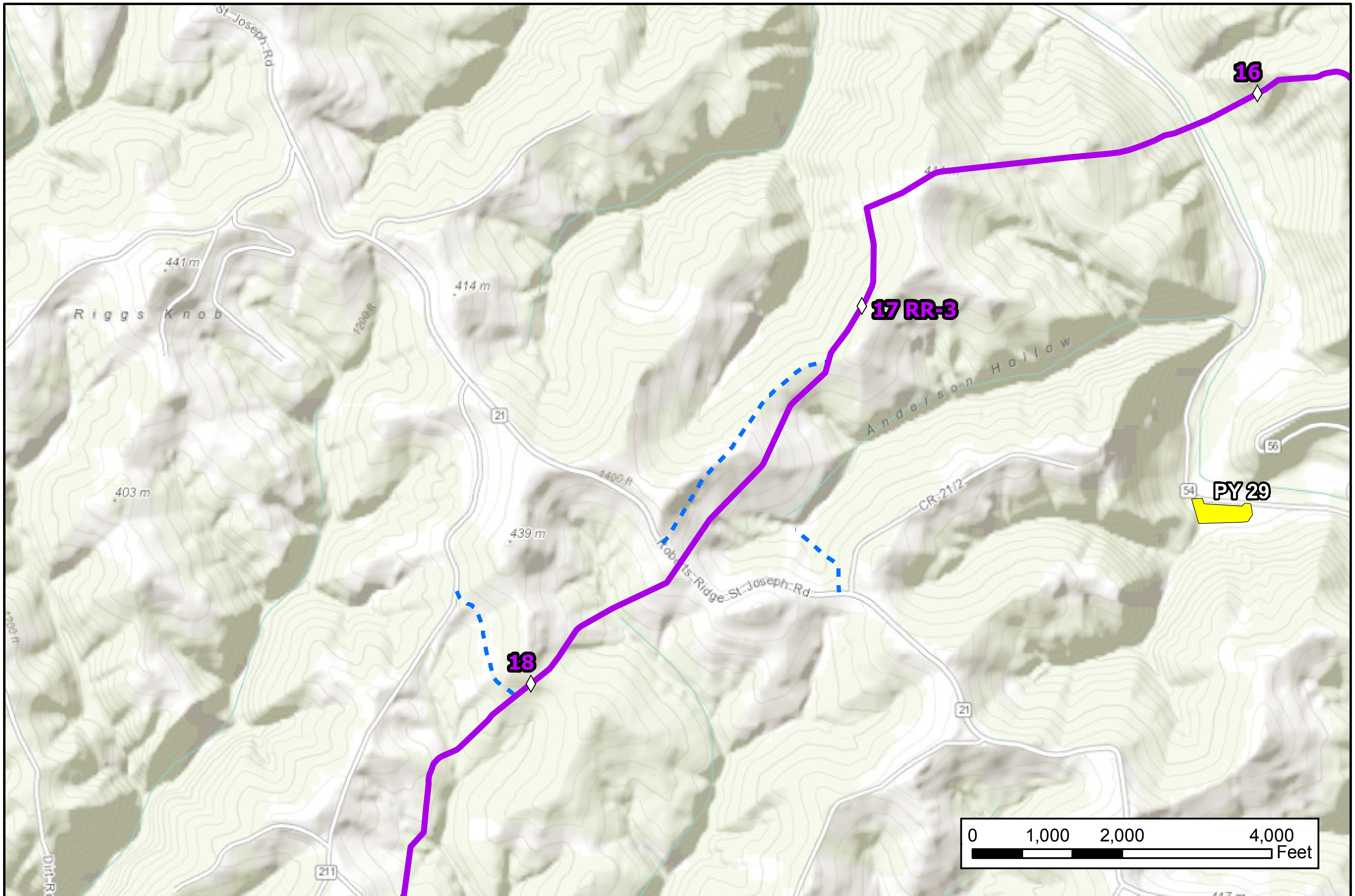
- LEX
- LEX1
- R-801 Loop
- R-801 Loop
- R-501 Abandonment
- Main line Valve
- Access Road
- Suction Line
- Permanent Site Facility
- Temporary Workspace
- Pipe Yards
- Milepost

Appendix B-6
Leach XPress
Project Overview



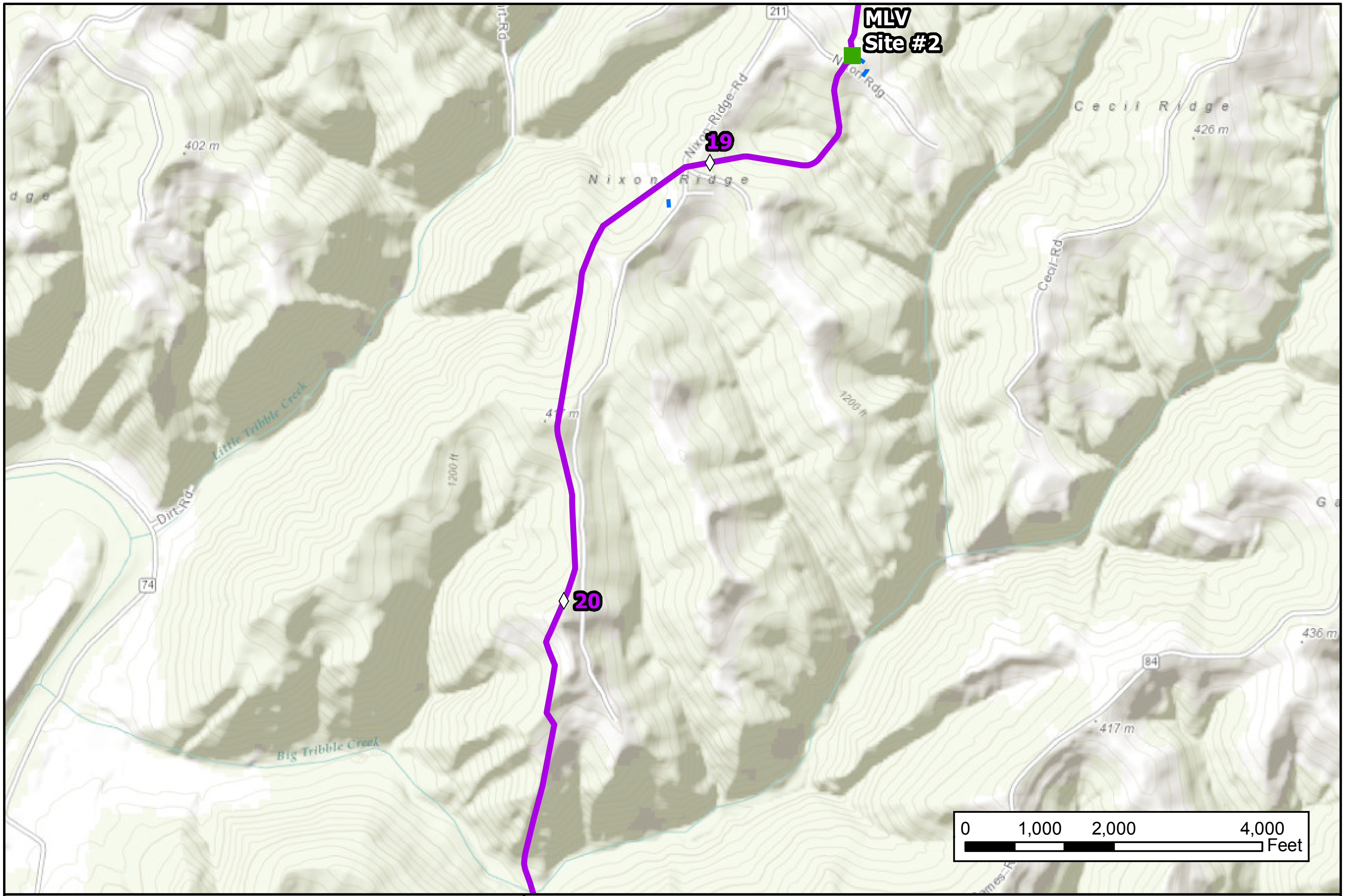
LEX	Access Road
LEX1	Suction Line
R-801 Loop	Permanent Site Facility
R-801 Loop	Temporary Workspace
R-501 Abandonment	Pipe Yards
Main line Valve	Milepost

Appendix B-7
Leach XPress
Project Overview



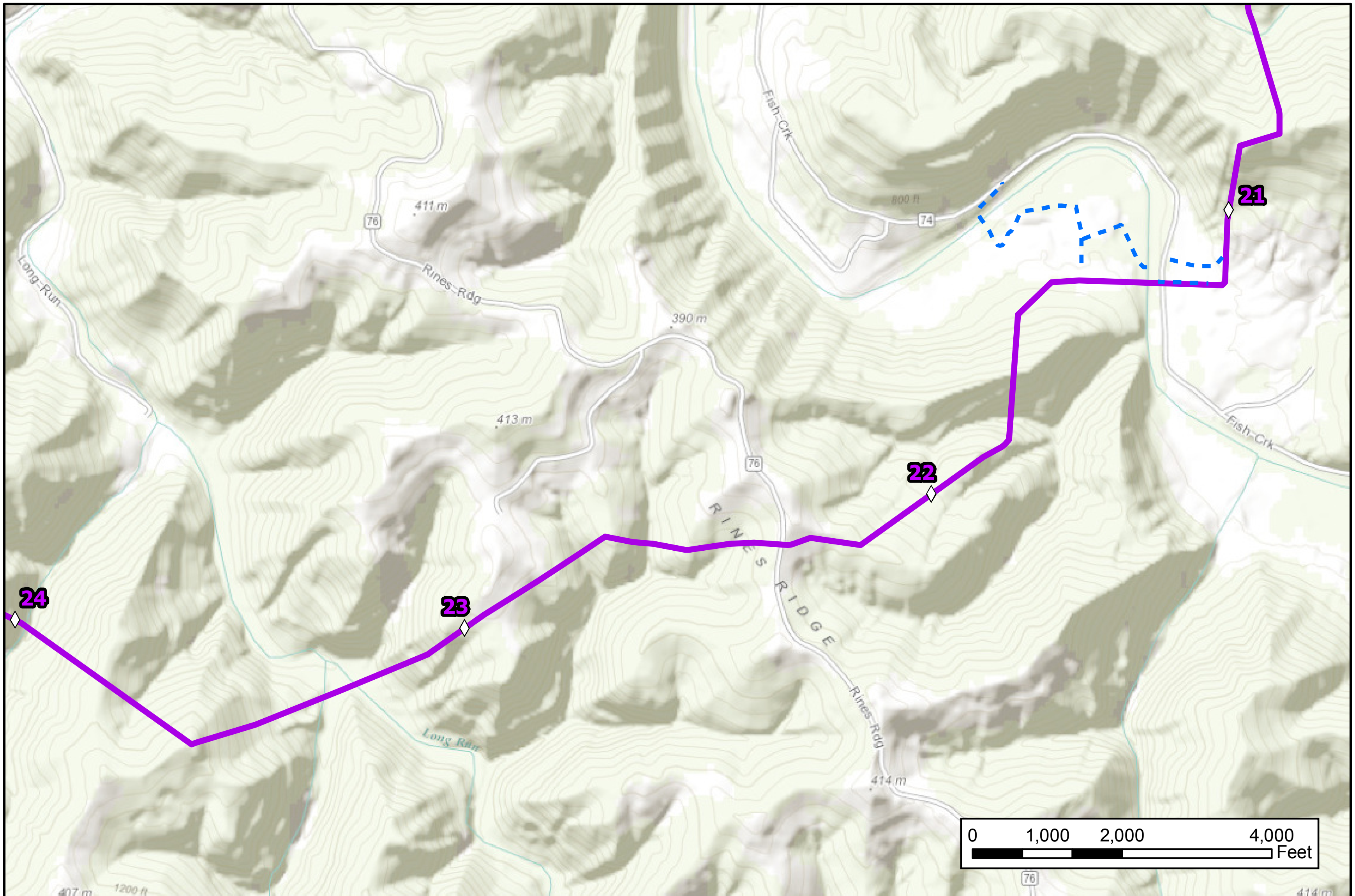
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-8
Leach XPress
Project Overview



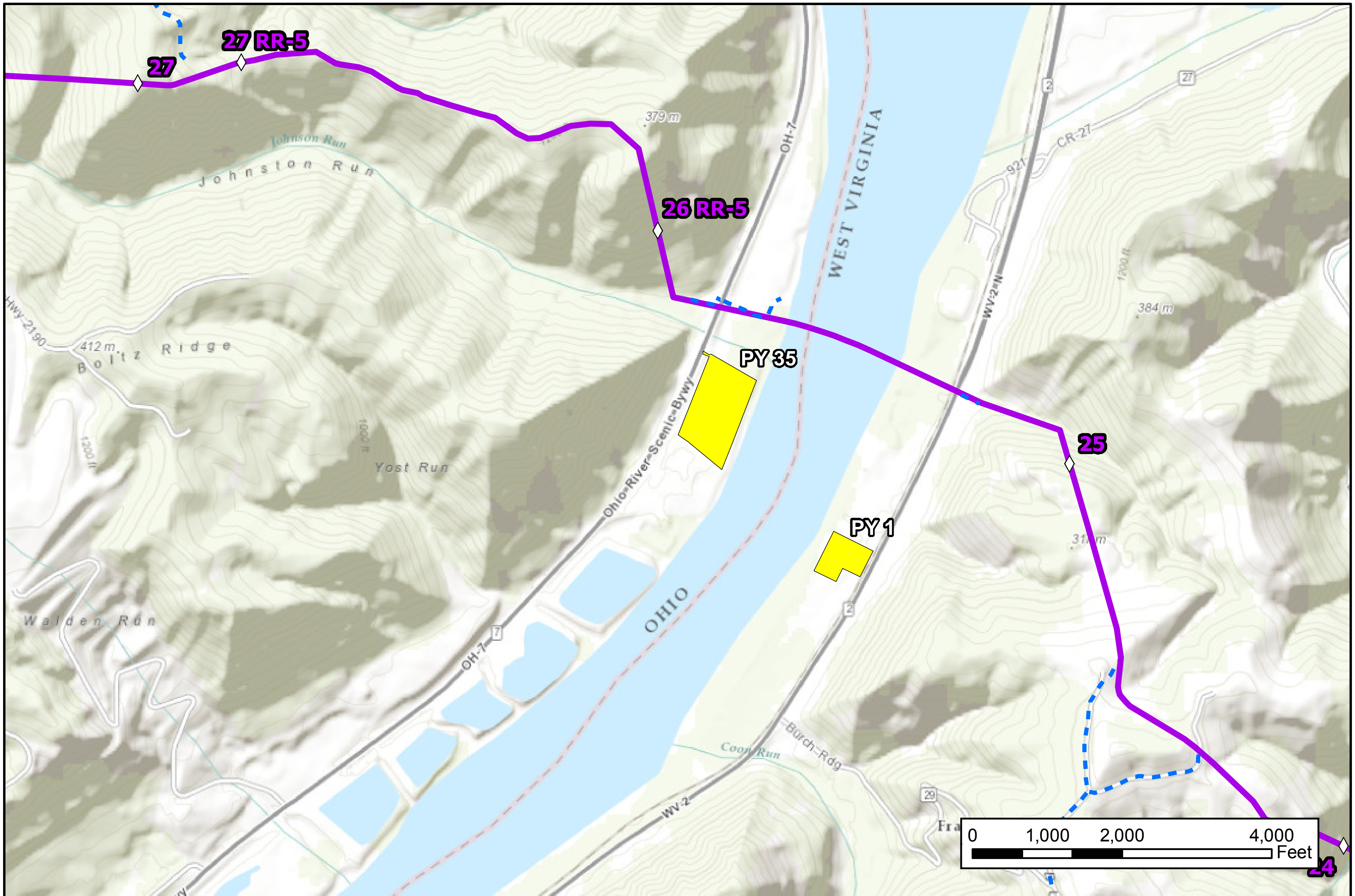
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-9
Leach XPress
Project Overview



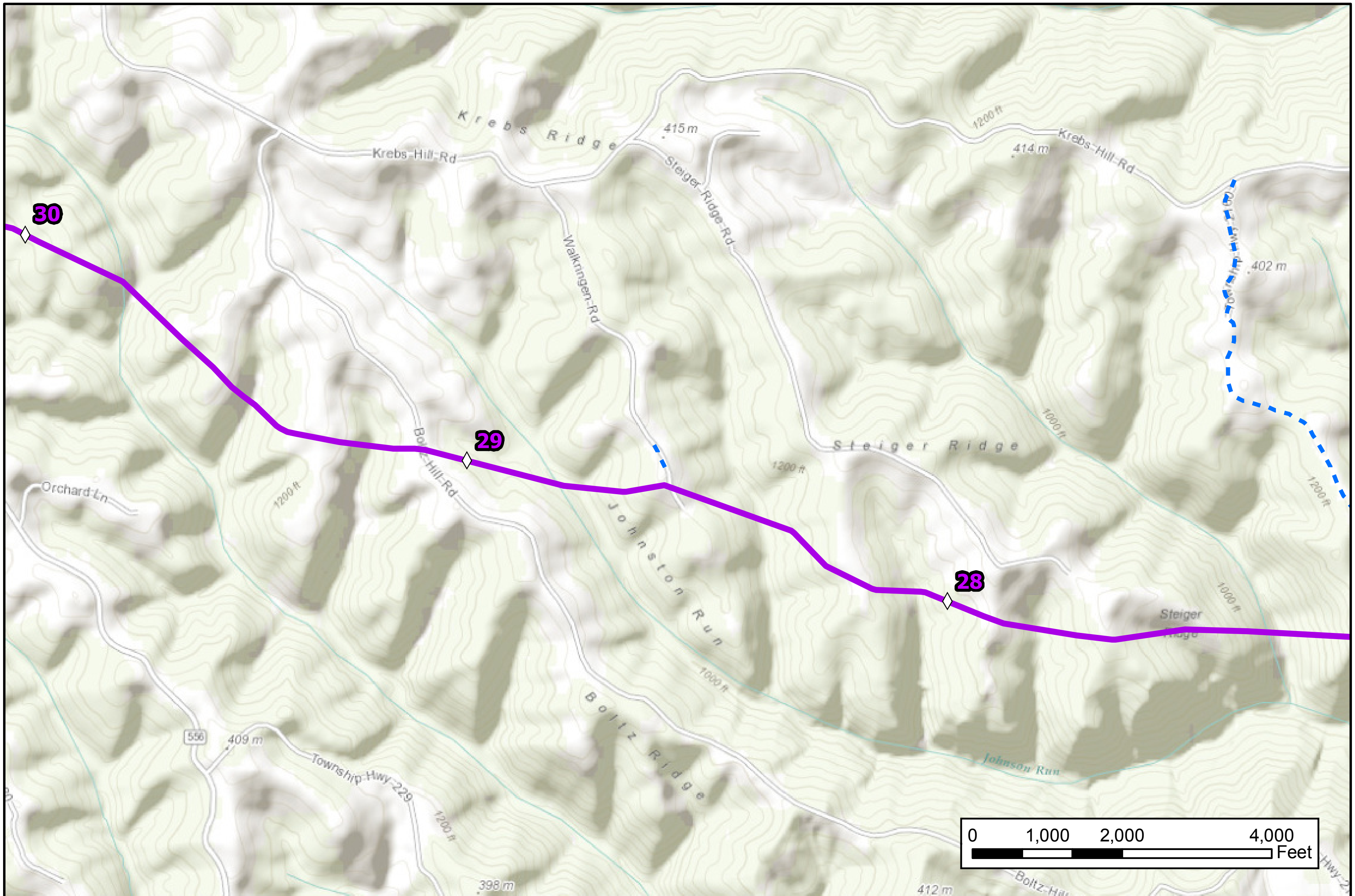
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-10
Leach XPress
Project Overview



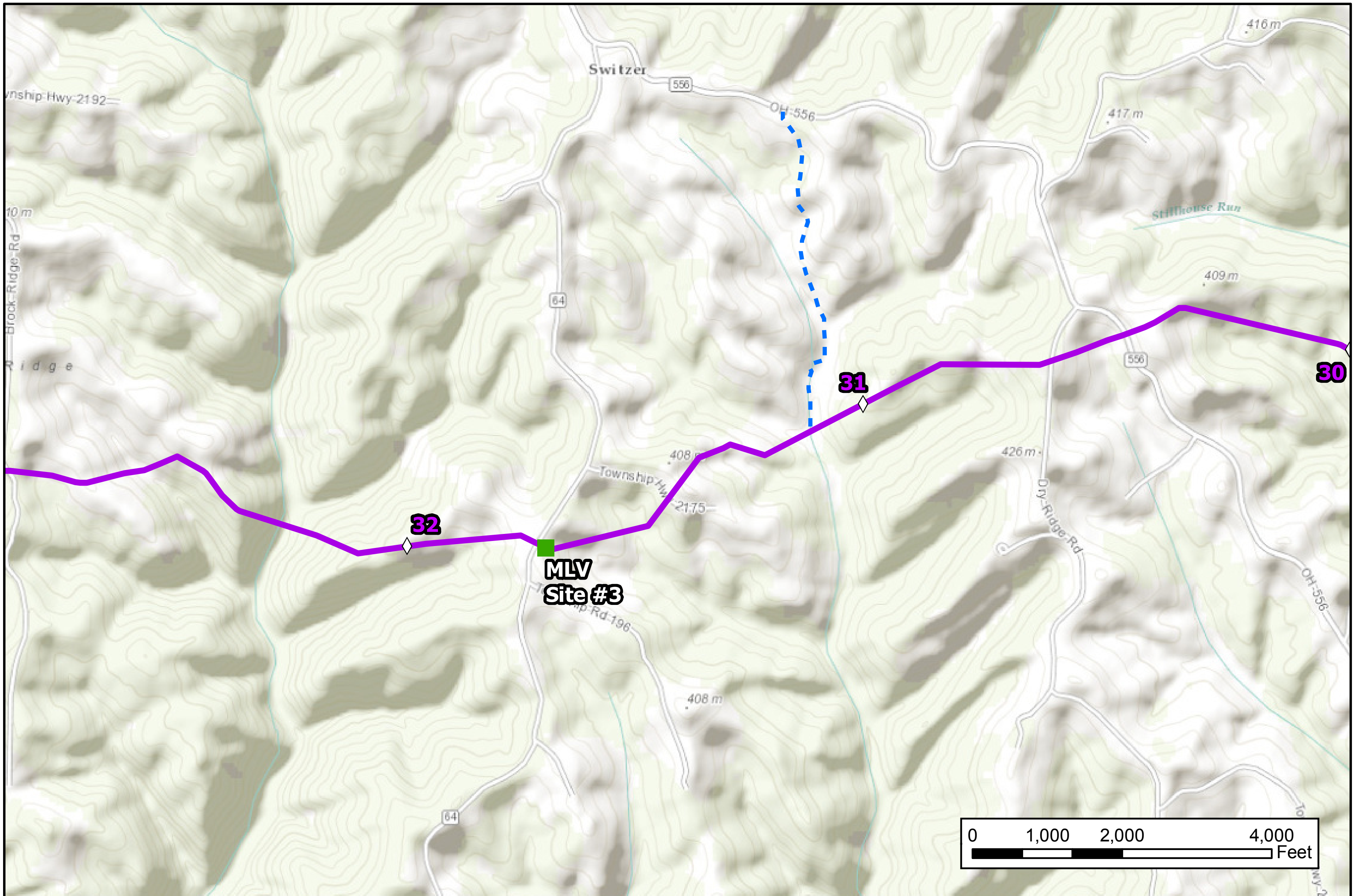
LEX	Access Road
LEX1	Suction Line
R-801 Loop	Permanent Site Facility
R-801 Loop	Temporary Workspace
R-501 Abandonment	Pipe Yards
Main line Valve	Milepost

Appendix B-11
Leach XPress
Project Overview

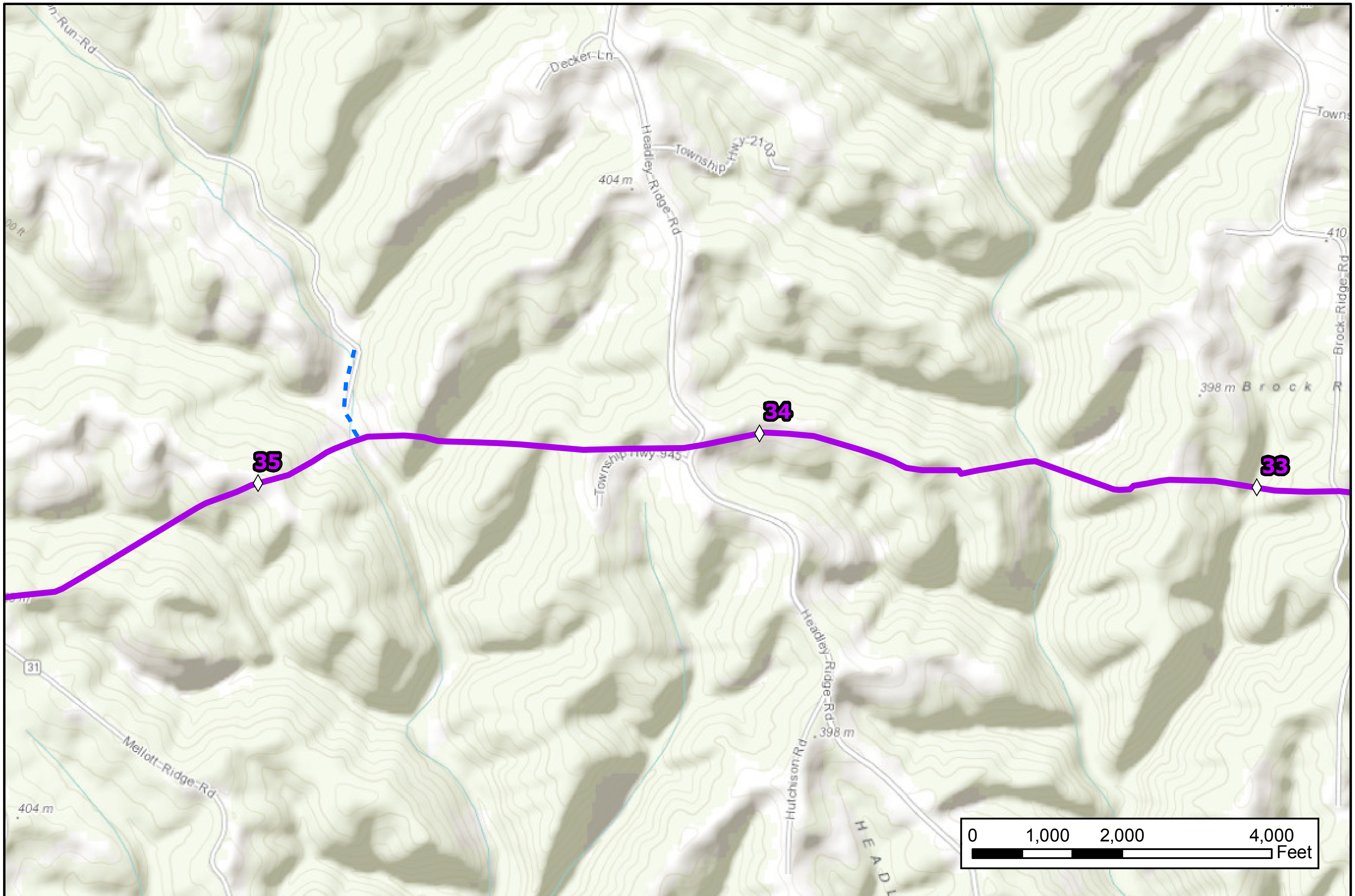


LEX		Access Road	
LEX1		Suction Line	
R-801 Loop		Permanent Site Facility	
R-801 Loop		Temporary Workspace	
R-501 Abandonment		Pipe Yards	
Main line Valve		Milepost	

Appendix B-12
Leach XPress
Project Overview

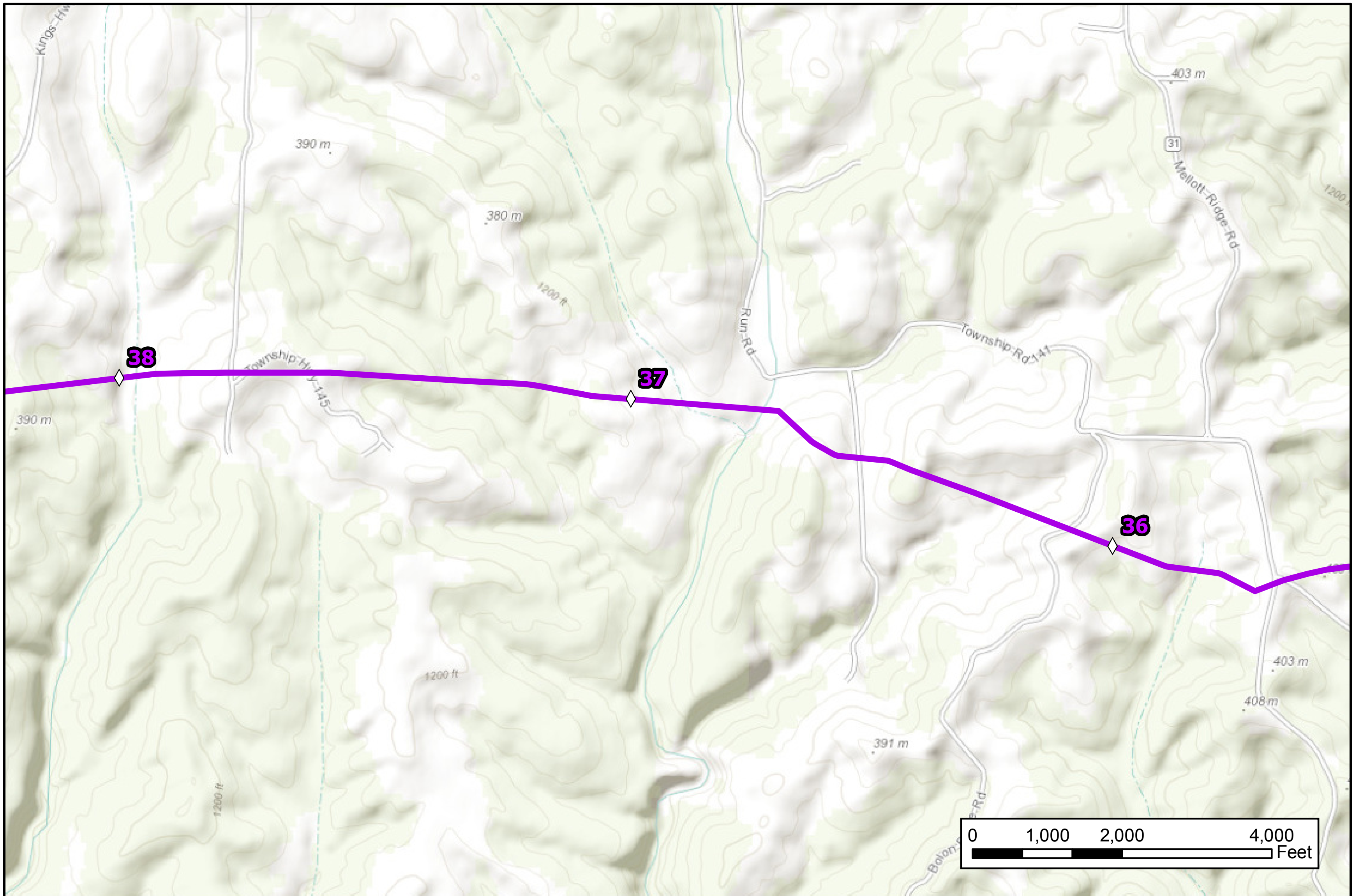


Appendix B-13
Leach XPress
Project Overview



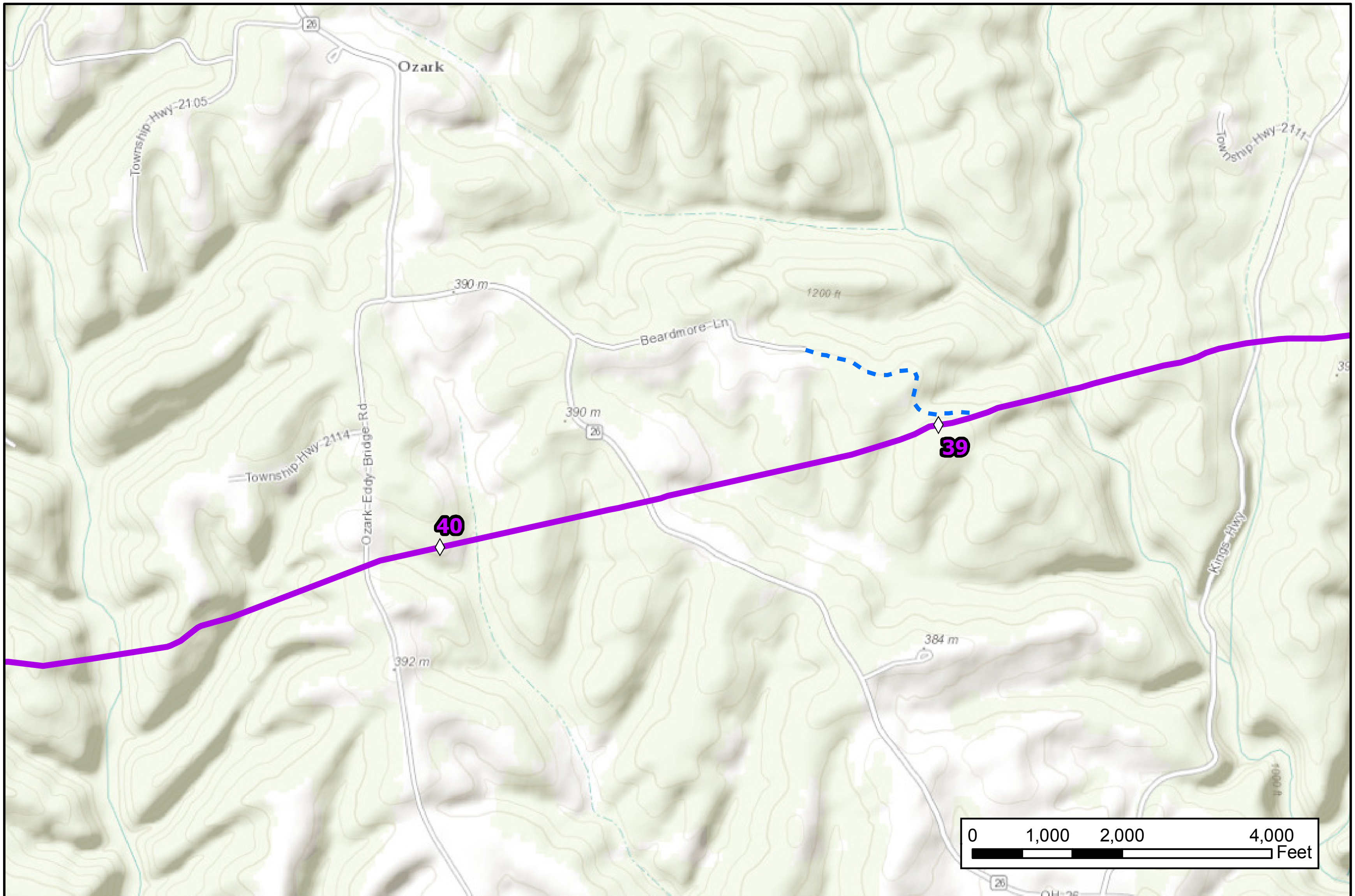
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-14
Leach XPress
Project Overview



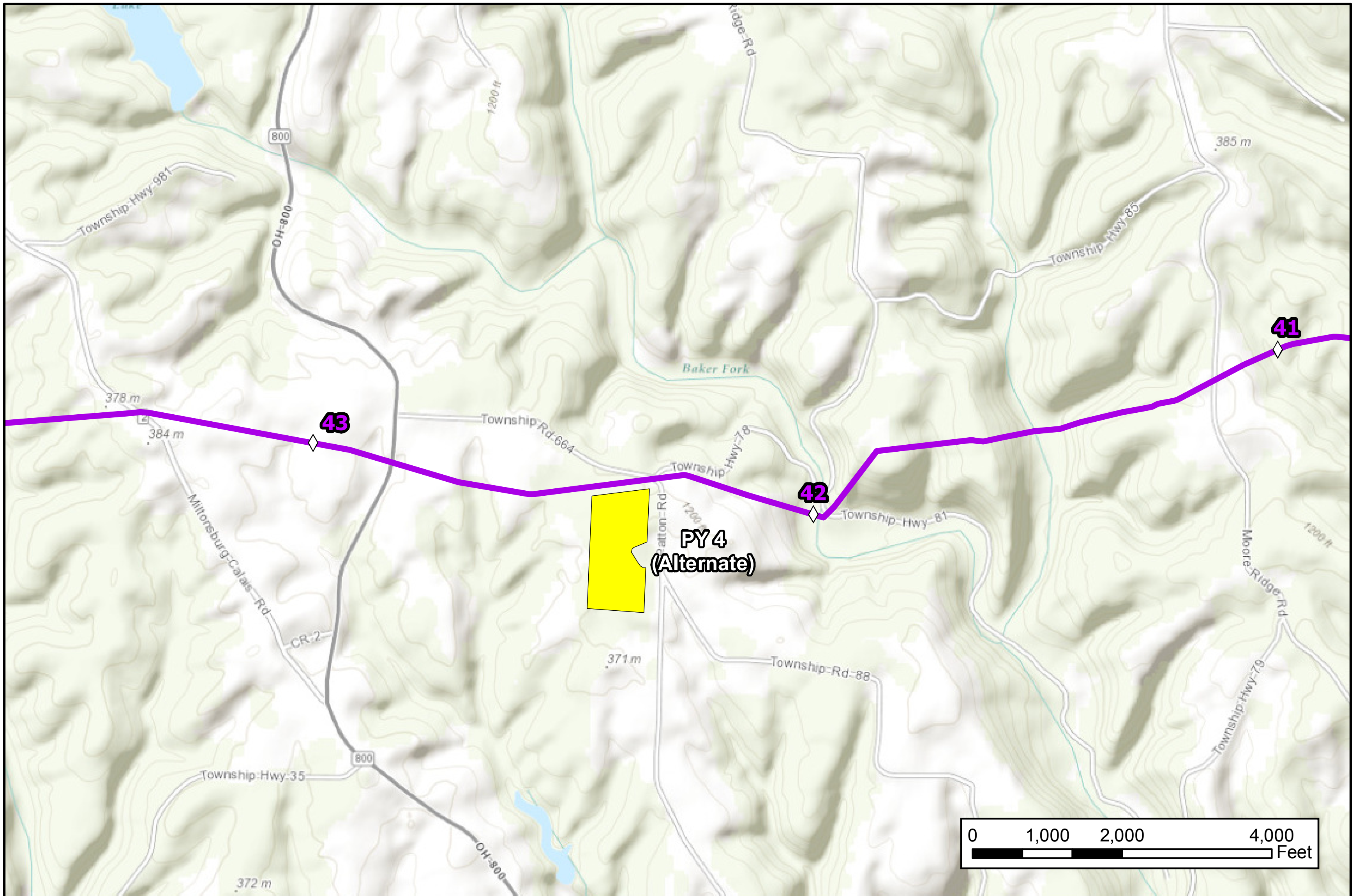
	LEX		Access Road
	LEX1		Suction Line
	R-801 Loop		Permanent Site Facility
	R-801 Loop		Temporary Workspace
	R-501 Abandonment		Pipe Yards
	Main line Valve	◊	Milepost

Appendix B-15
Leach XPress
Project Overview



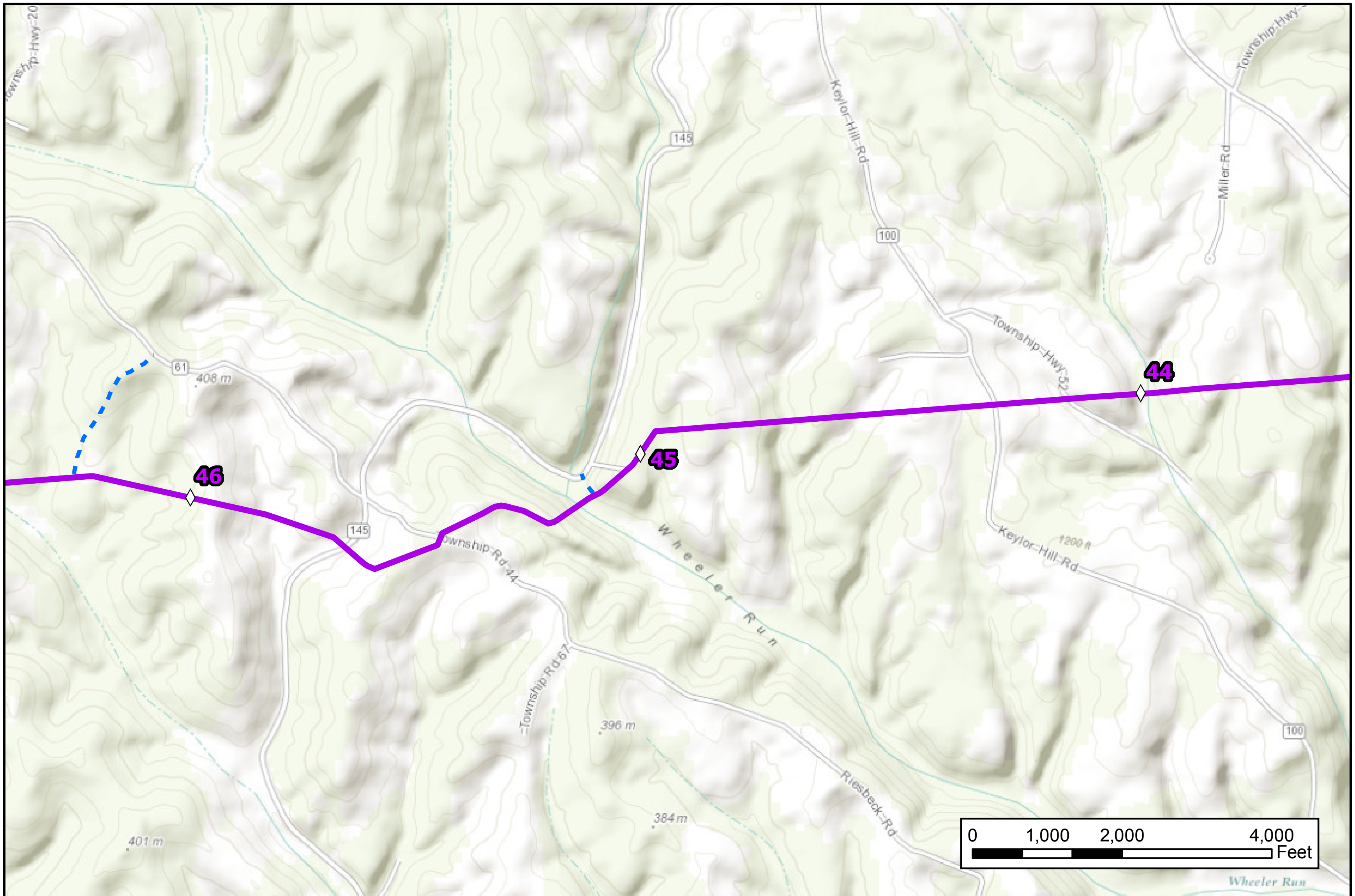
LEX		Access Road	
LEX1		Suction Line	
R-801 Loop		Permanent Site Facility	
R-801 Loop		Temporary Workspace	
R-501 Abandonment		Pipe Yards	
Main line Valve		Milepost	

Appendix B-16
Leach XPress
Project Overview



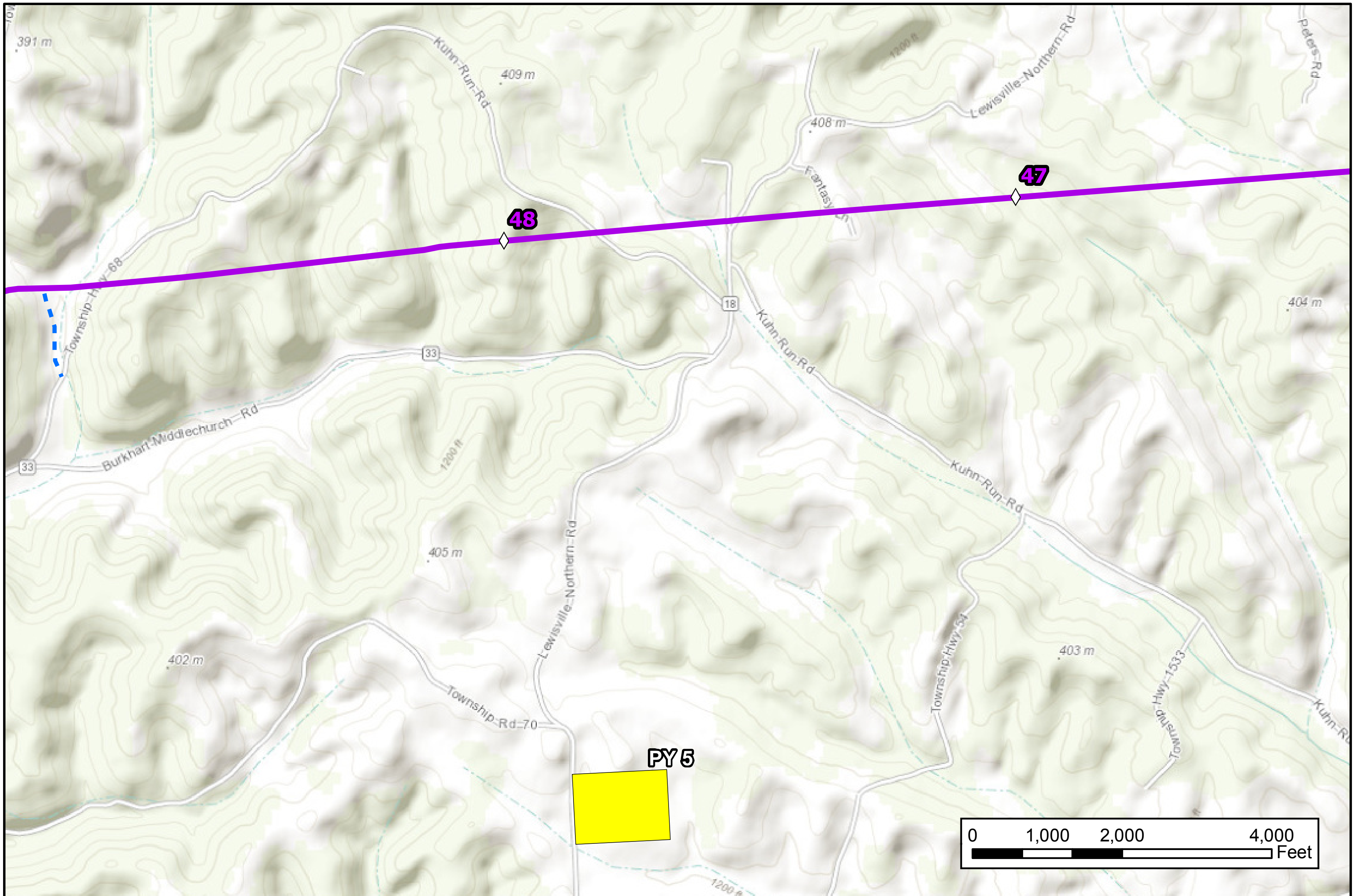
LEX		Access Road	
LEX1		Suction Line	
R-801 Loop		Permanent Site Facility	
R-801 Loop		Temporary Workspace	
R-501 Abandonment		Pipe Yards	
Main line Valve		Milepost	

Appendix B-17
Leach XPress
Project Overview



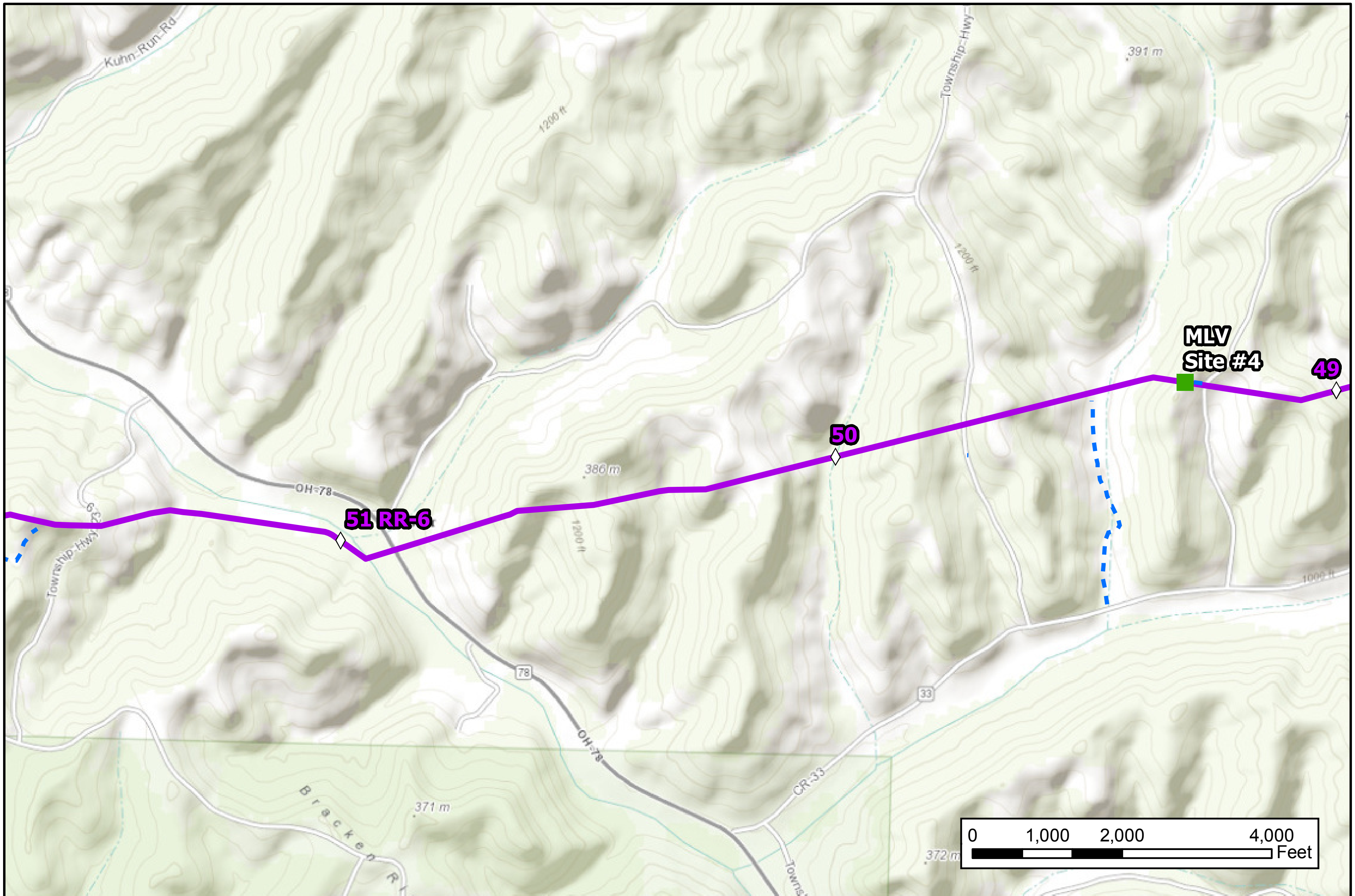
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-18
Leach XPress
Project Overview



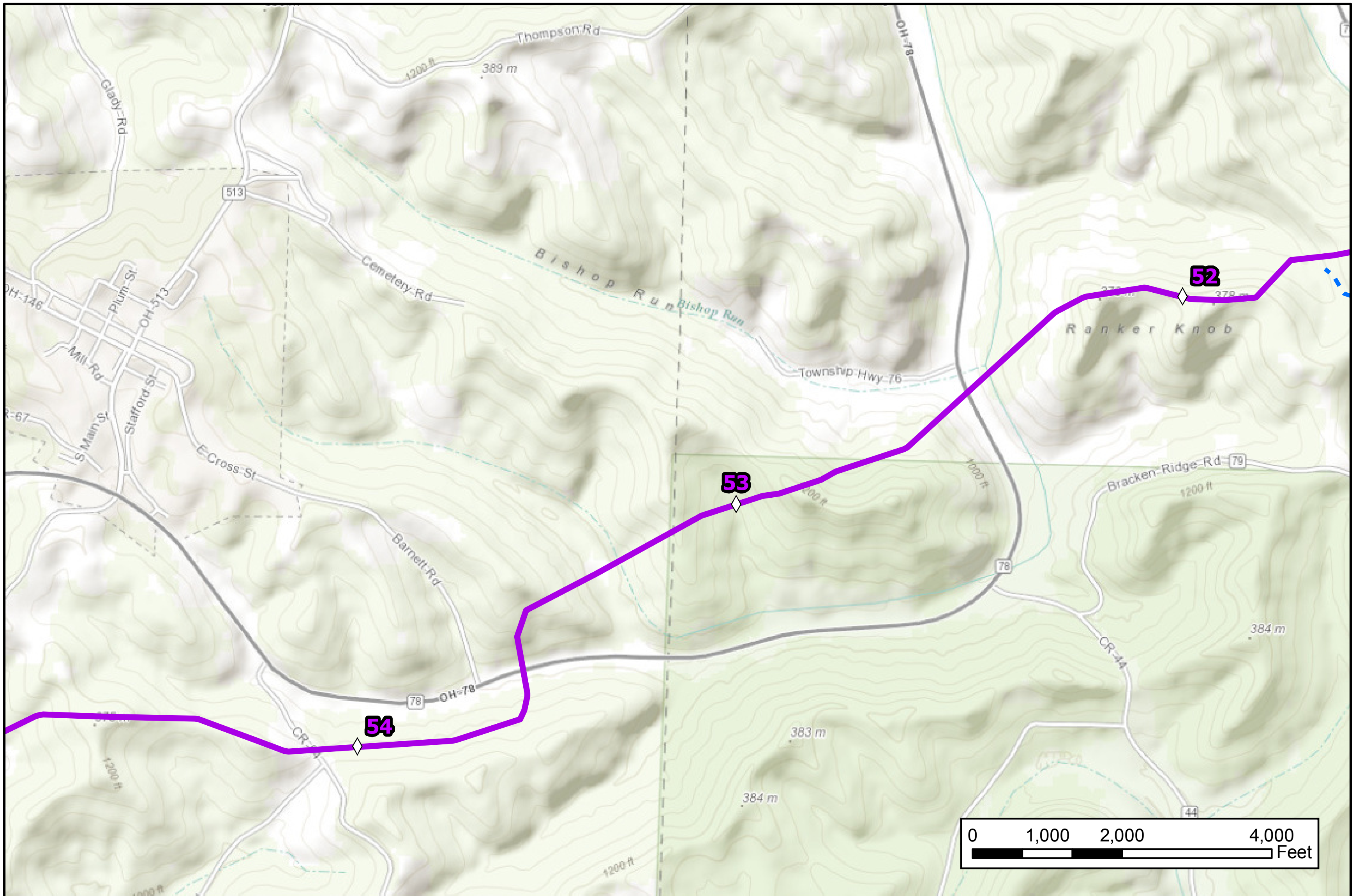
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-19
Leach XPress
Project Overview



LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-20
Leach XPress
Project Overview



LEX	Access Road
LEX1	Suction Line
R-801 Loop	Permanent Site Facility
R-801 Loop	Temporary Workspace
R-501 Abandonment	Pipe Yards
Main line Valve	Milepost

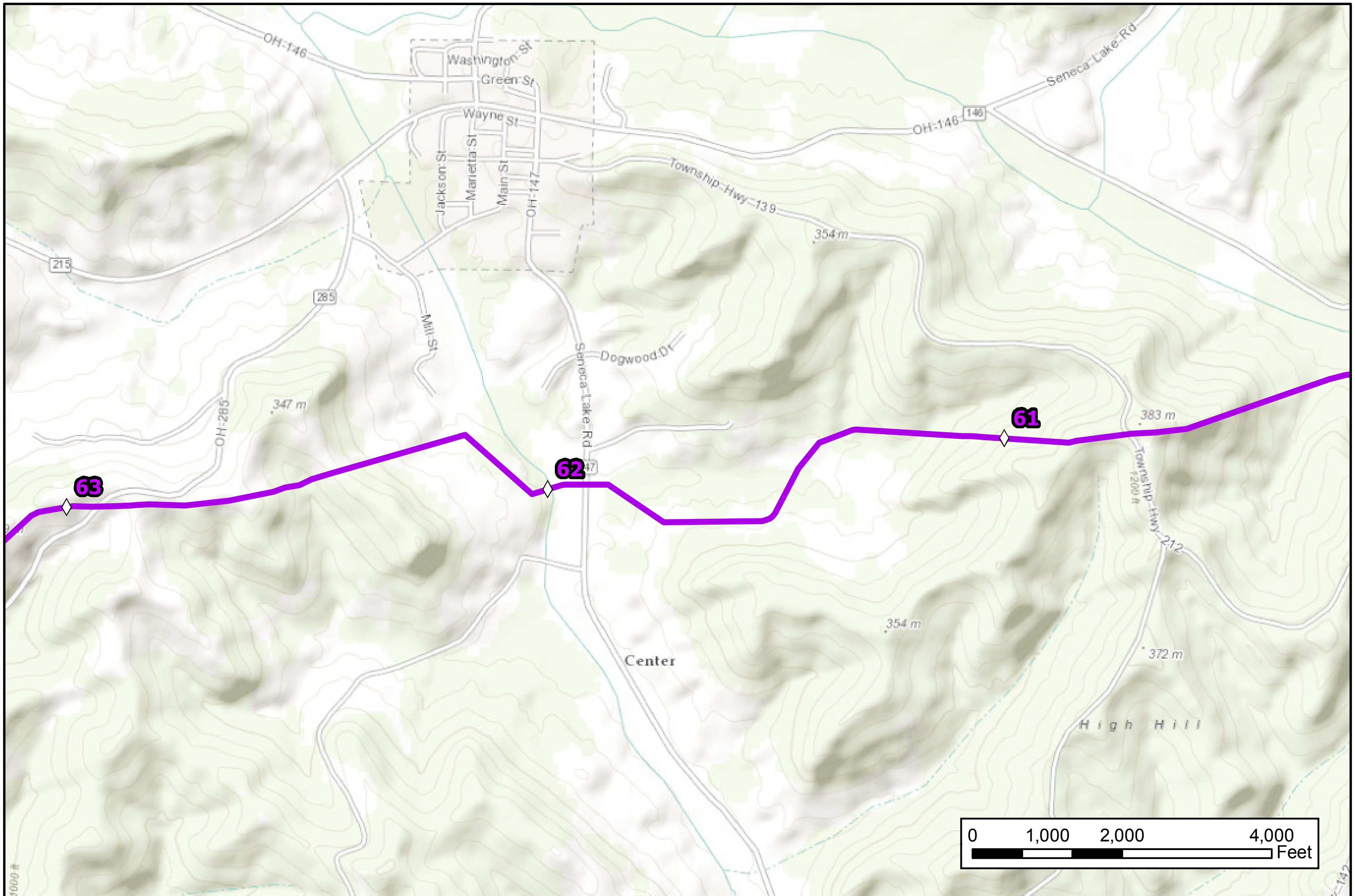
Appendix B-21
Leach XPress
Project Overview

	LEX		Access Road
	LEX1		Suction Line
	R-801 Loop		Permanent Site Facility
	R-801 Loop		Temporary Workspace
	R-501 Abandonment		Pipe Yards
	Main line Valve	◊	Milepost

Appendix B-22
Leach XPress
Project Overview

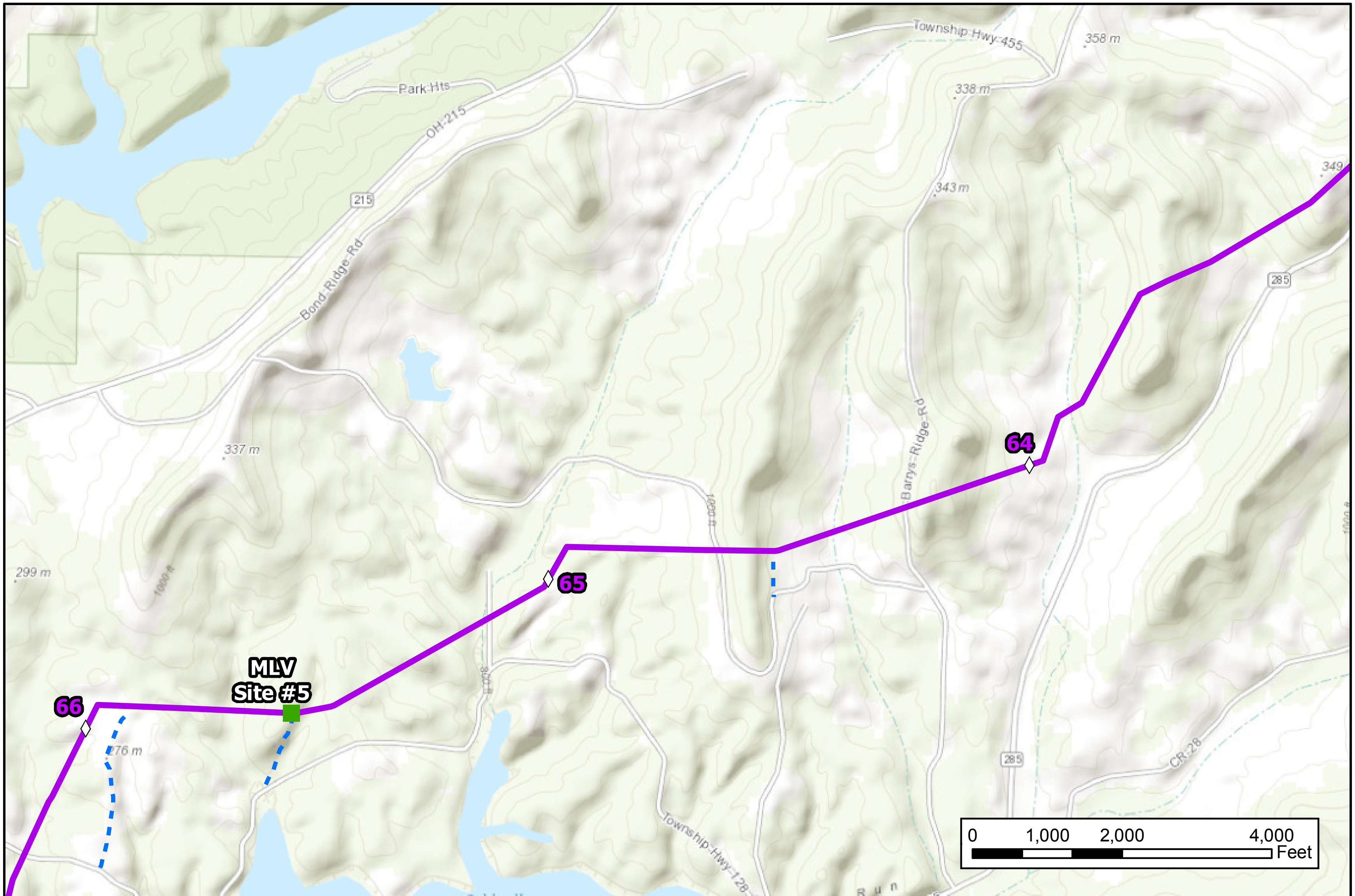
LEX		Access Road	
LEX1		Suction Line	
R-801 Loop		Permanent Site Facility	
R-801 Loop		Temporary Workspace	
R-501 Abandonment		Pipe Yards	
Main line Valve		Milepost	

Appendix B-23
Leach XPress
Project Overview



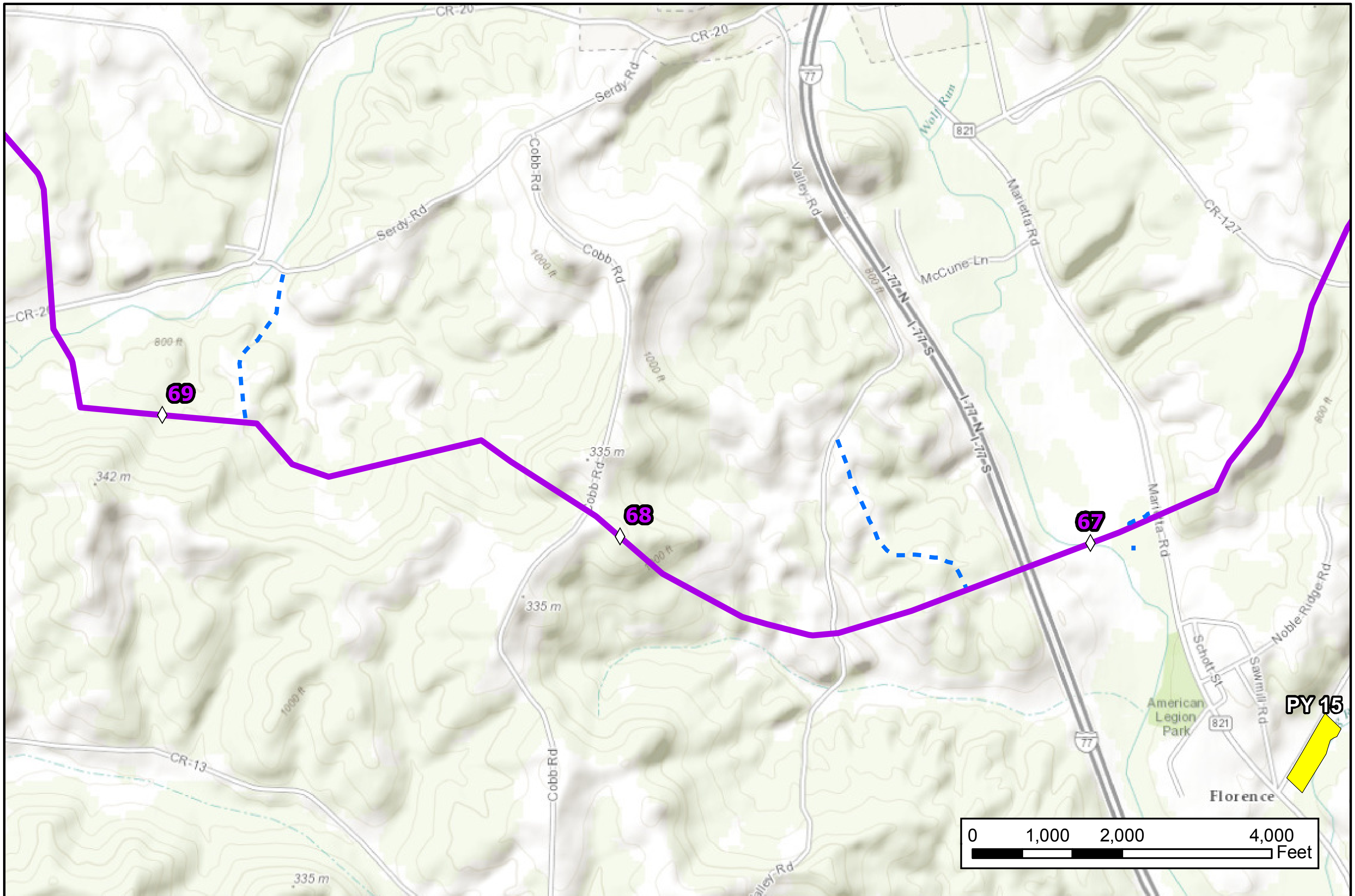
LEX	Access Road
LEX1	Suction Line
R-801 Loop	Permanent Site Facility
R-801 Loop	Temporary Workspace
R-501 Abandonment	Pipe Yards
Main line Valve	Milepost

Appendix B-24
Leach XPress
Project Overview



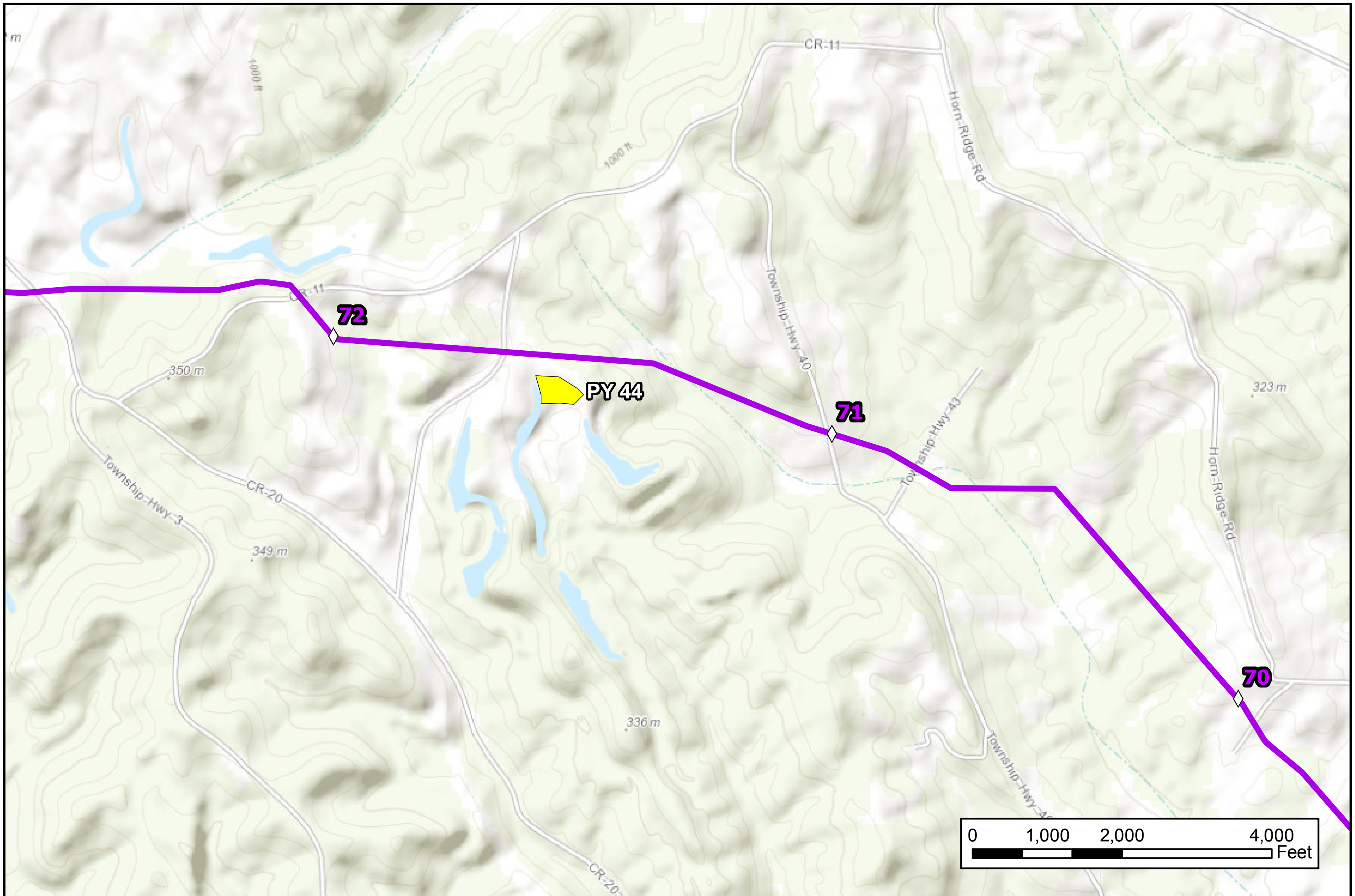
LEX	Access Road
LEX1	Suction Line
R-801 Loop	Permanent Site Facility
R-801 Loop	Temporary Workspace
R-501 Abandonment	Pipe Yards
Main line Valve	Milepost

Appendix B-25
Leach XPress
Project Overview



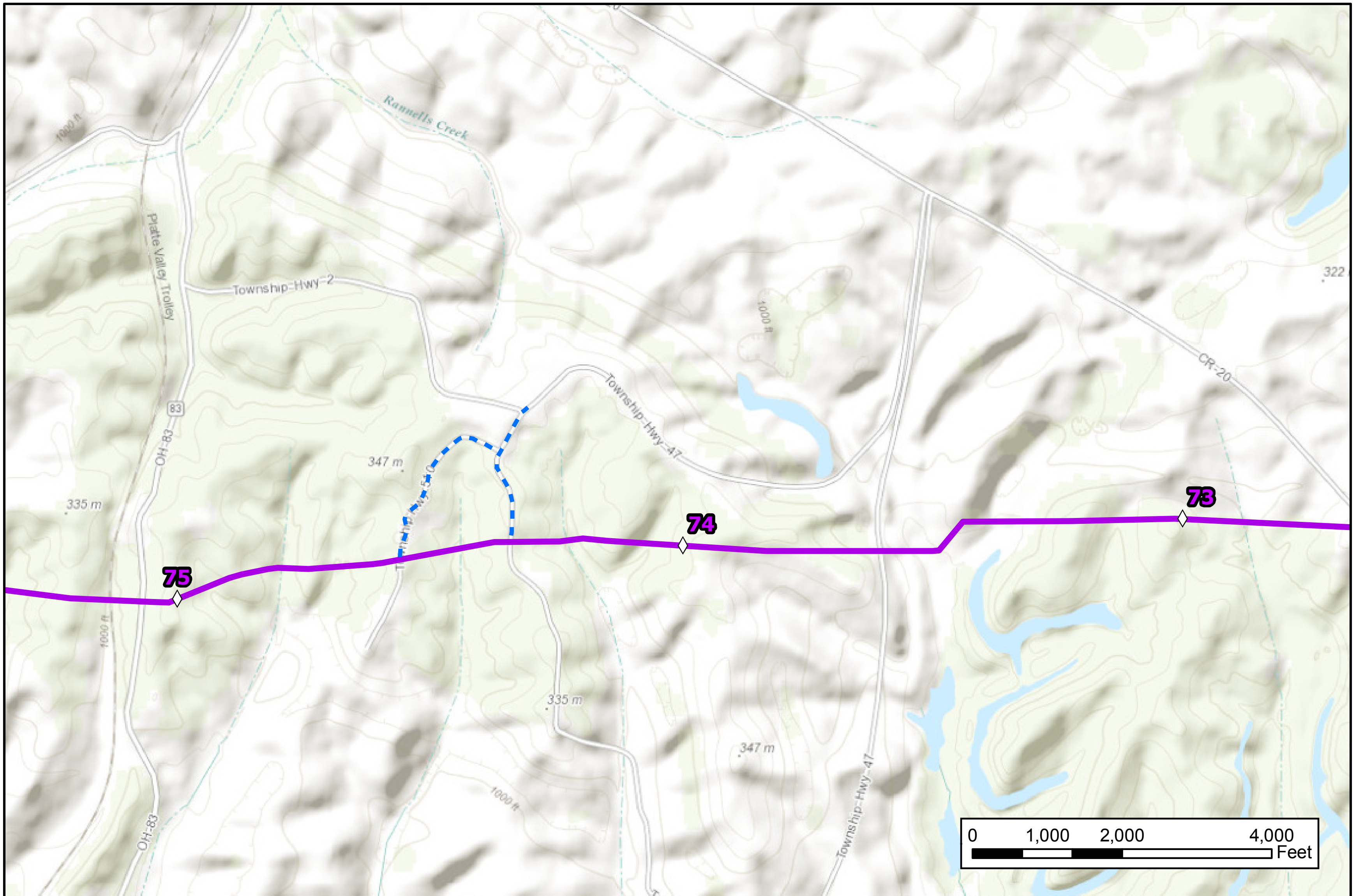
LEX		Access Road	
LEX1		Suction Line	
R-801 Loop		Permanent Site Facility	
R-801 Loop		Temporary Workspace	
R-501 Abandonment		Pipe Yards	
Main line Valve		Milepost	

Appendix B-26
Leach XPress
Project Overview



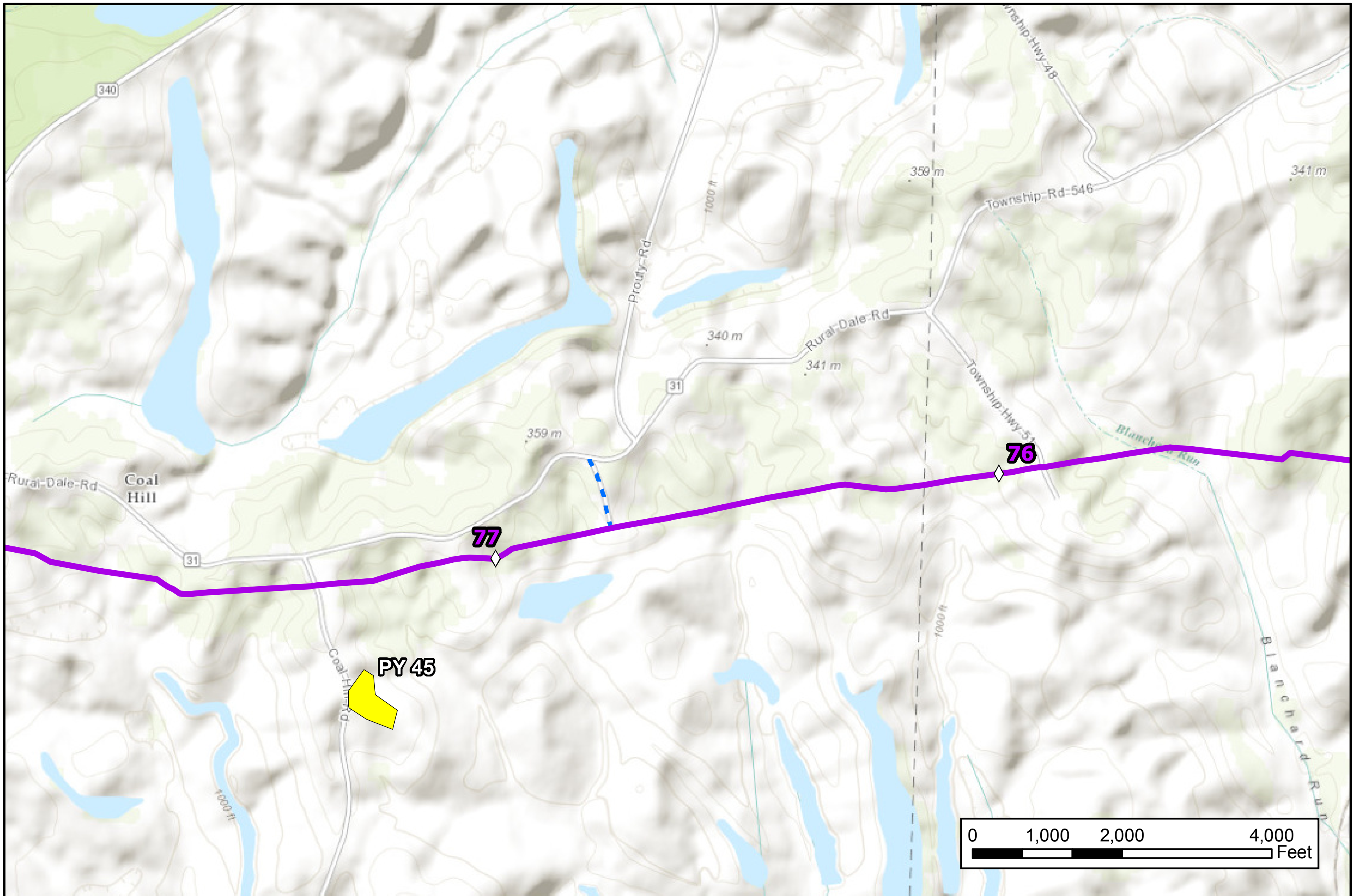
LEX	Access Road
LEX1	Suction Line
R-801 Loop	Permanent Site Facility
R-801 Loop	Temporary Workspace
R-501 Abandonment	Pipe Yards
Main line Valve	Milepost

Appendix B-27
Leach XPress
Project Overview



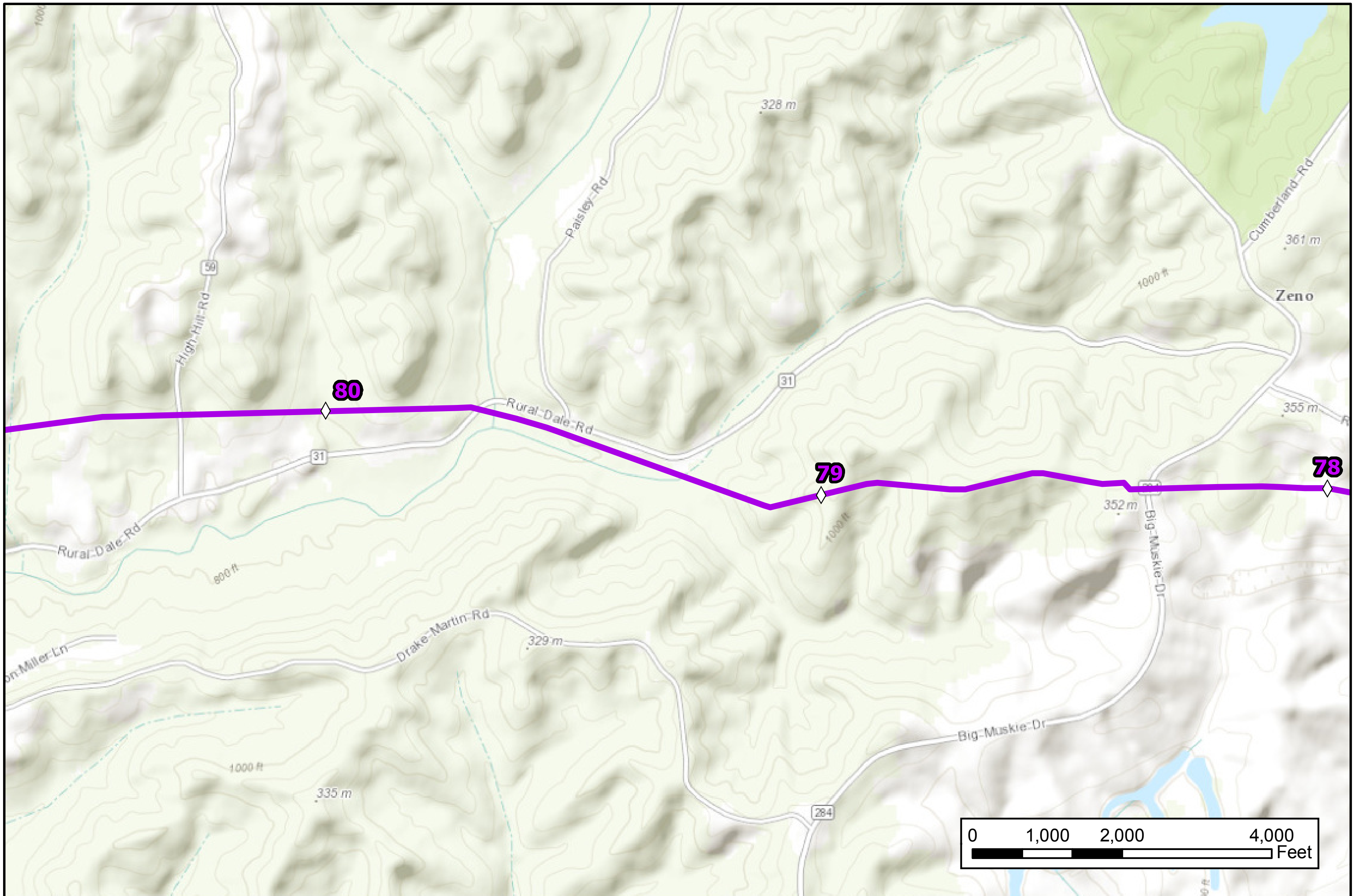
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-28
Leach XPress
Project Overview



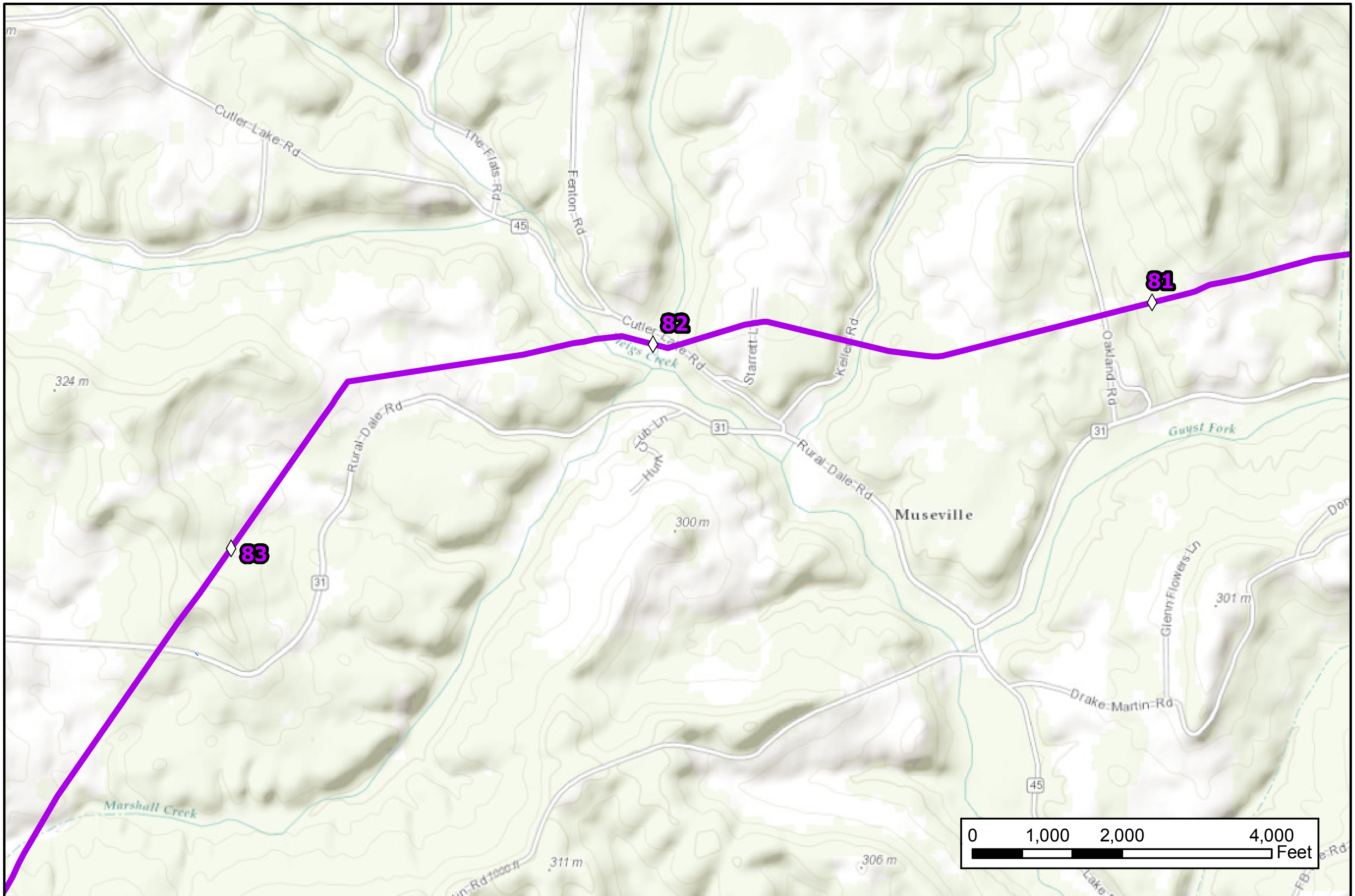
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-29
Leach XPress
Project Overview



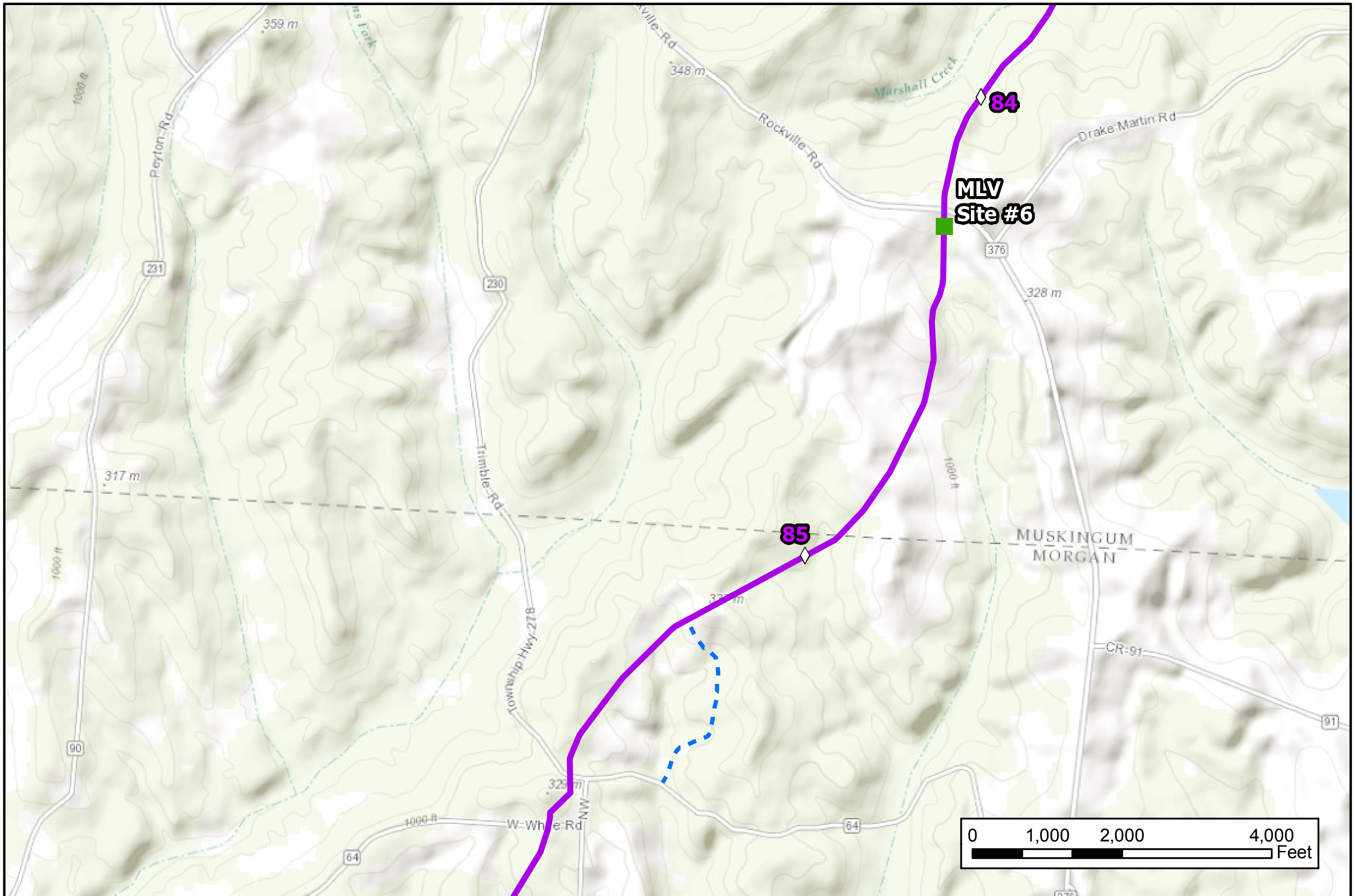
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-30
Leach XPress
Project Overview



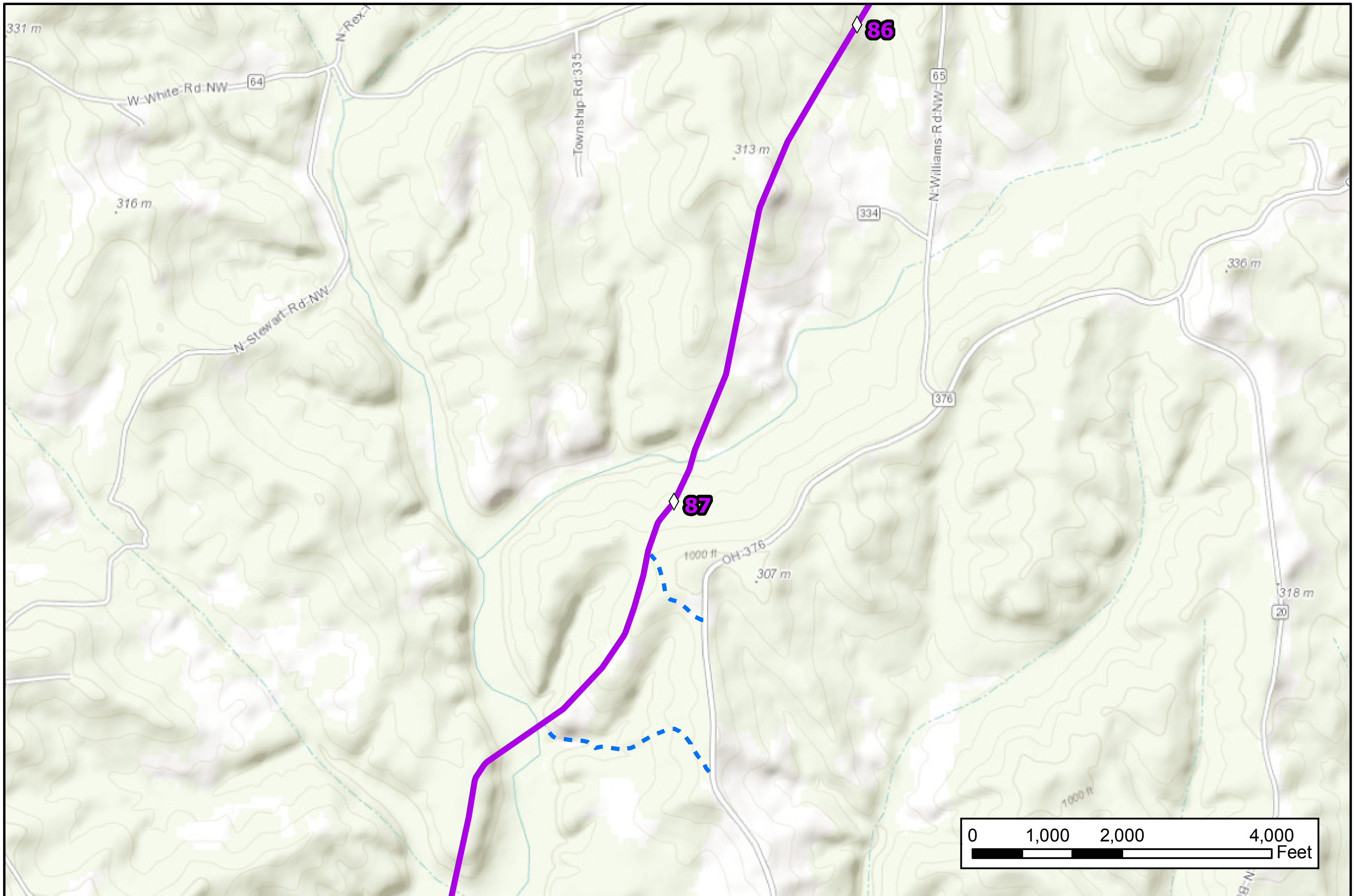
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-31
Leach XPress
Project Overview



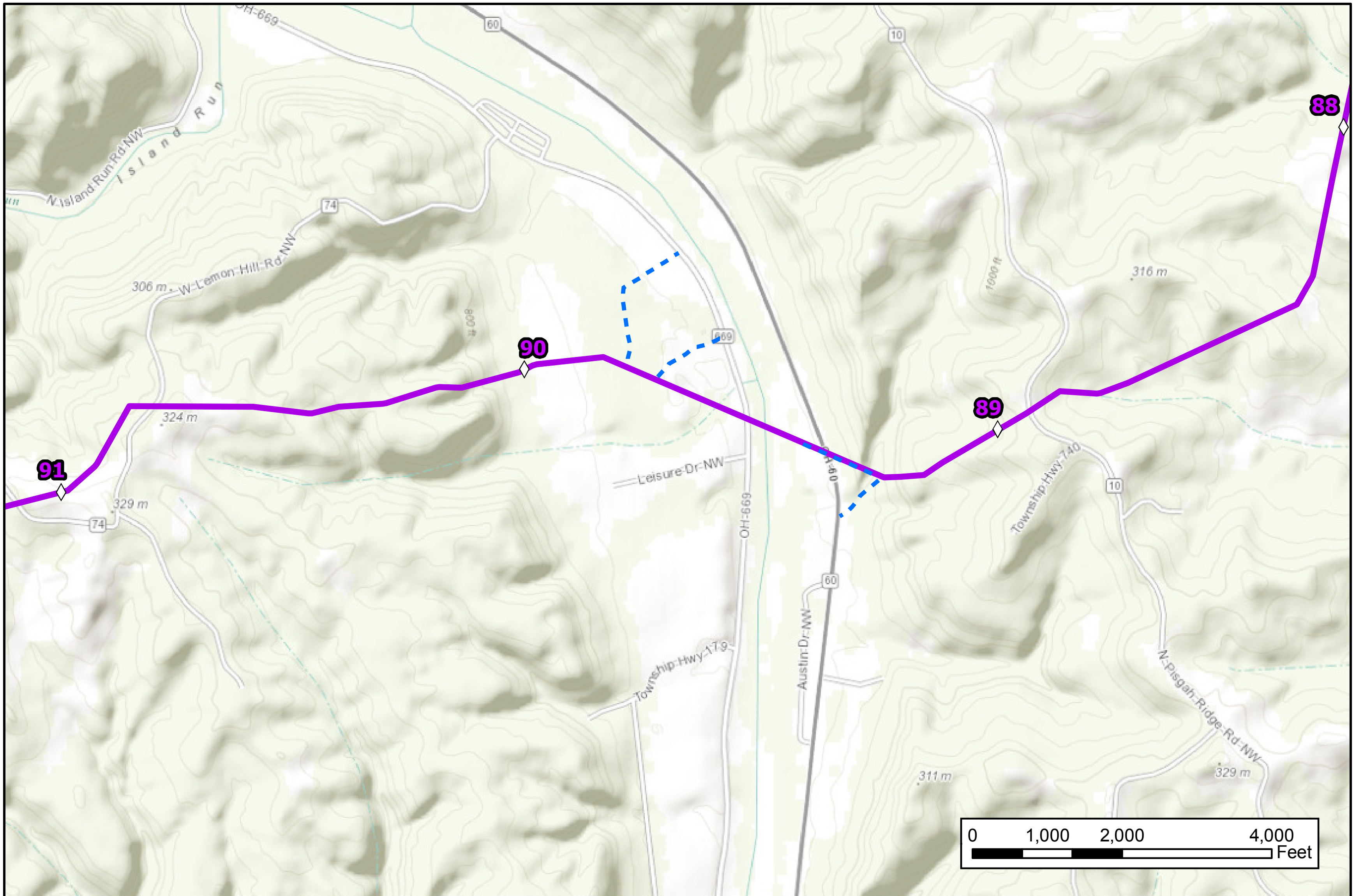
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-32
Leach XPress
Project Overview



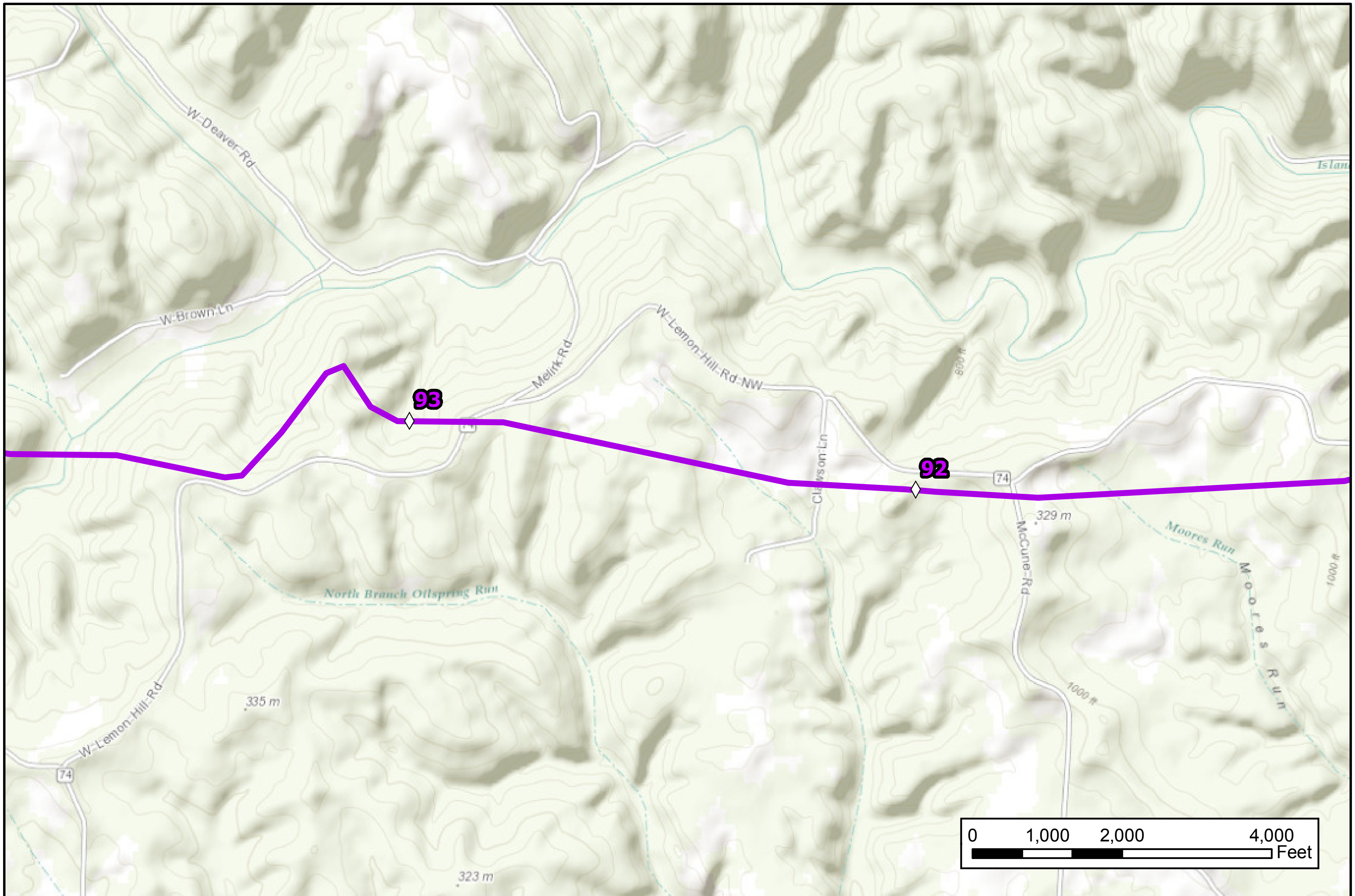
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-33
Leach XPress
Project Overview



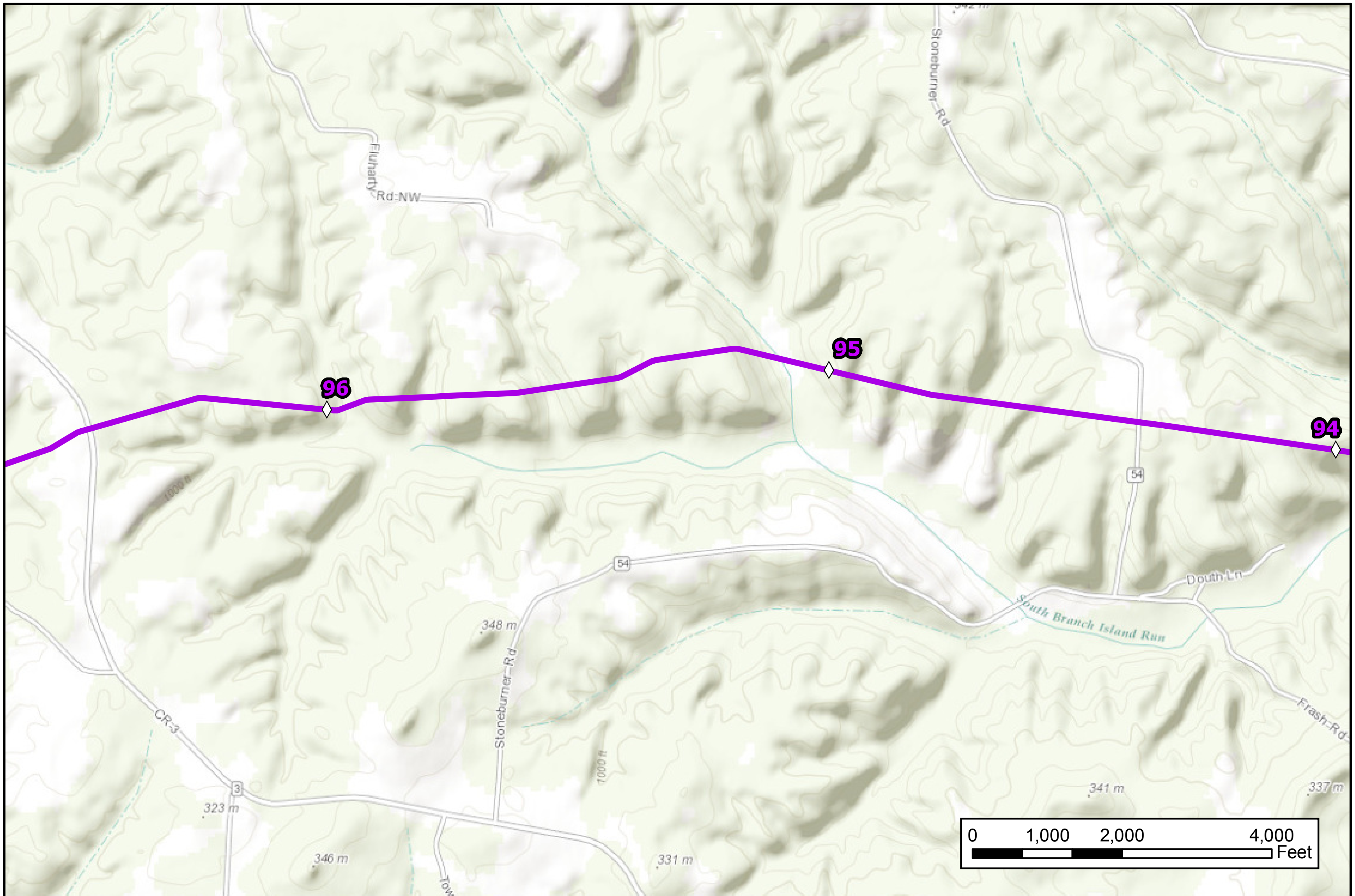
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-34
Leach XPress
Project Overview



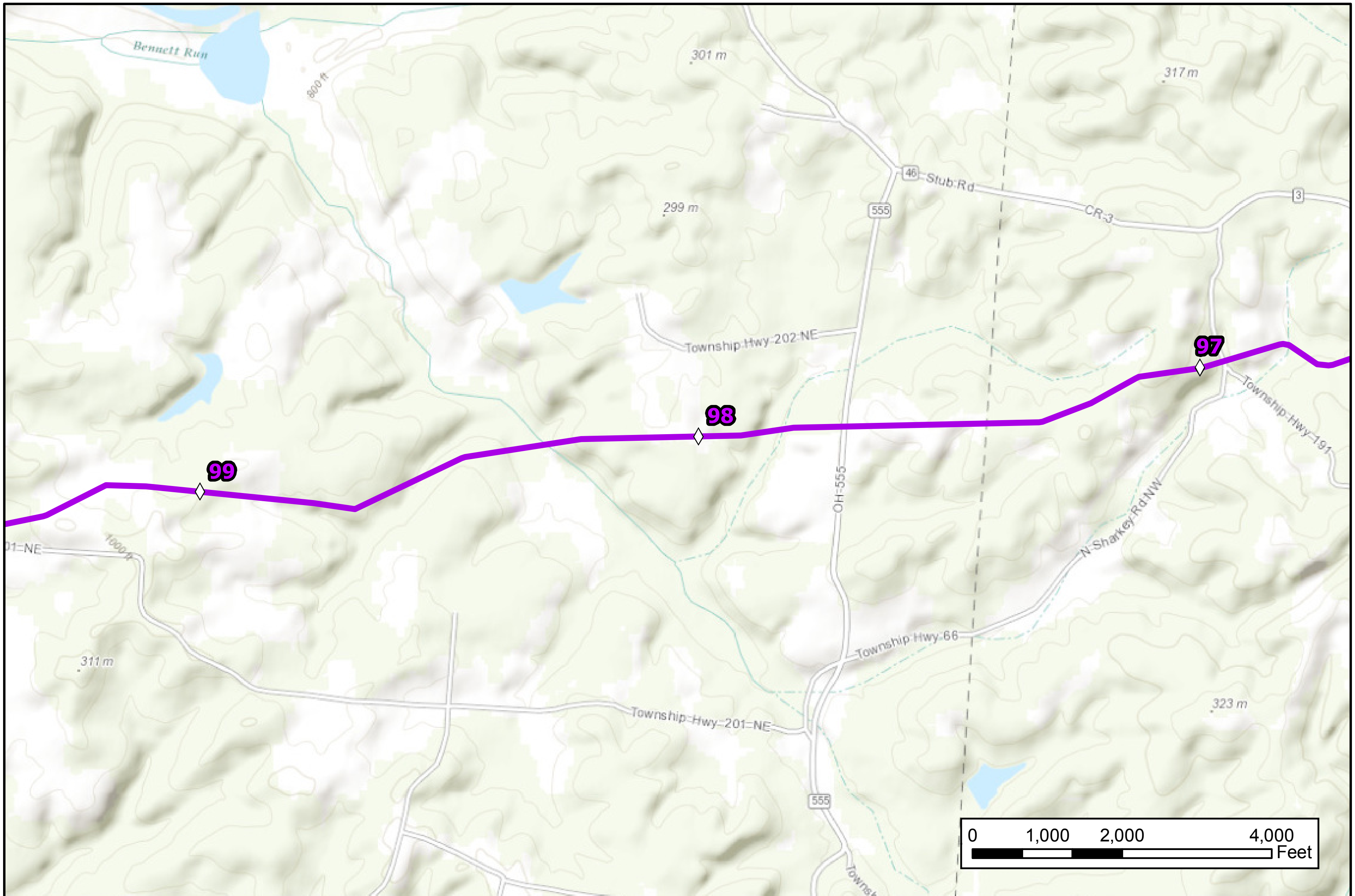
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-35
Leach XPress
Project Overview



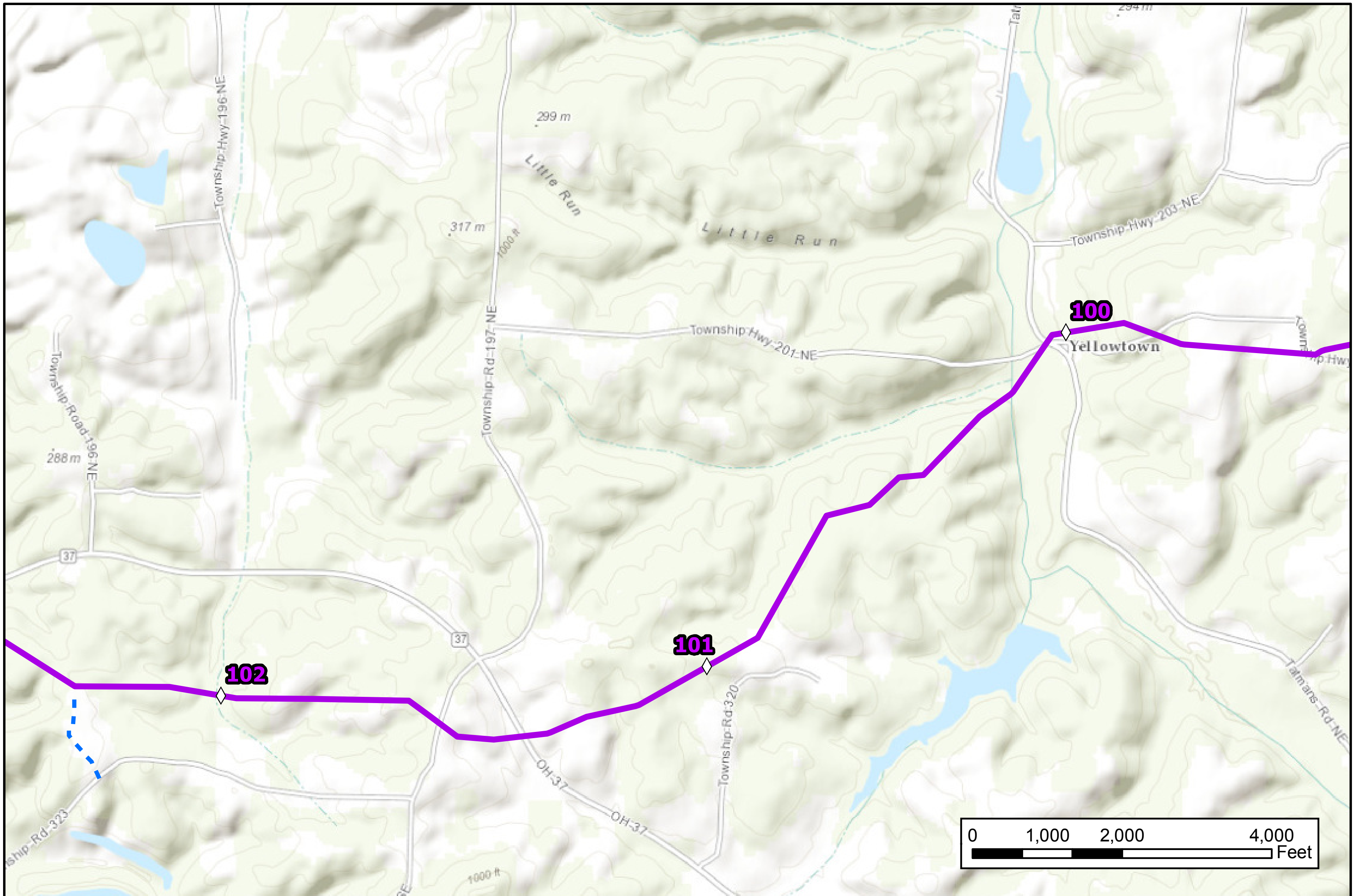
	LEX		Access Road
	LEX1		Suction Line
	R-801 Loop		Permanent Site Facility
	R-801 Loop		Temporary Workspace
	R-501 Abandonment		Pipe Yards
	Main line Valve	◊	Milepost

Appendix B-36
Leach XPress
Project Overview



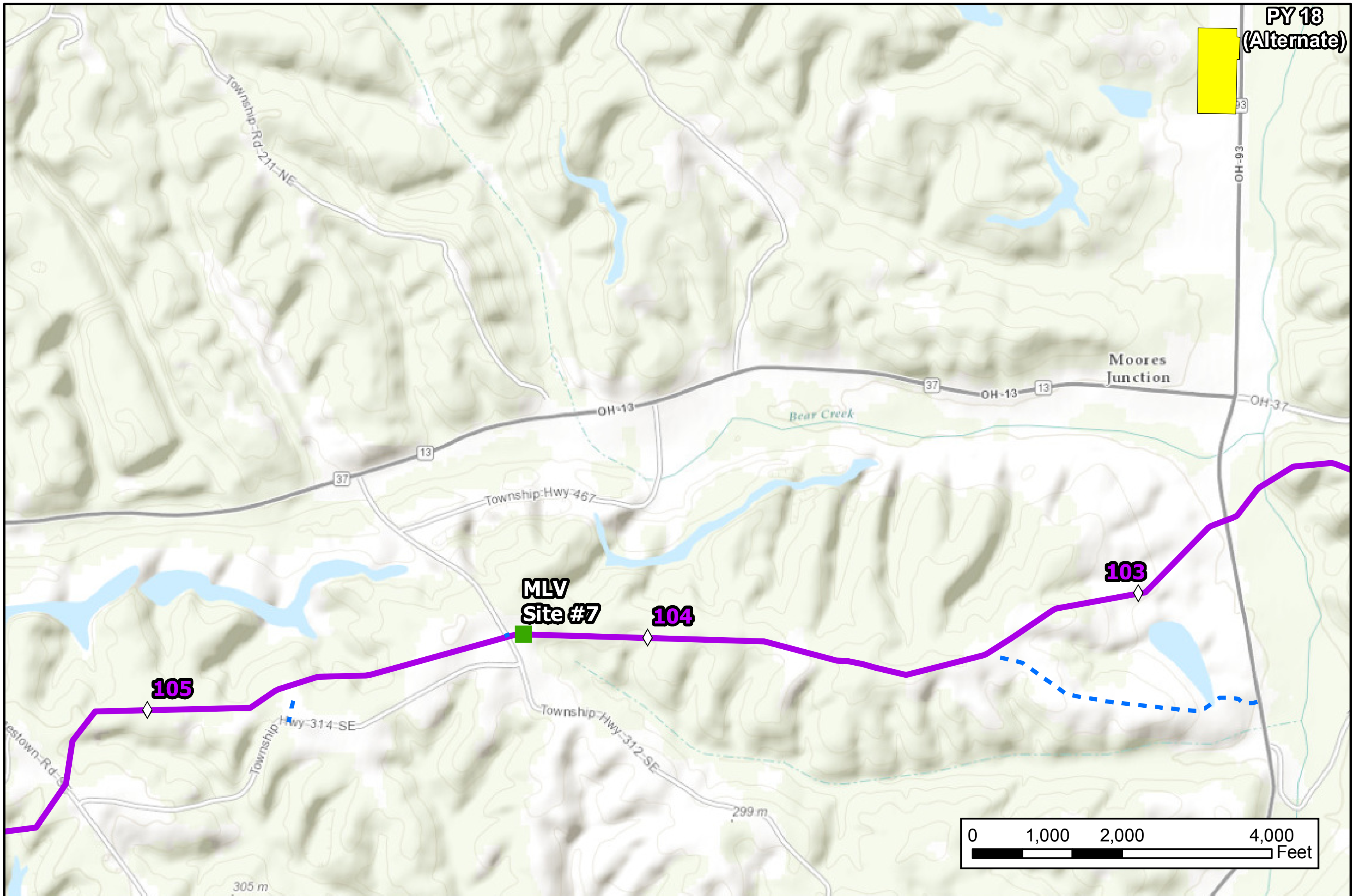
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-37
Leach XPress
Project Overview



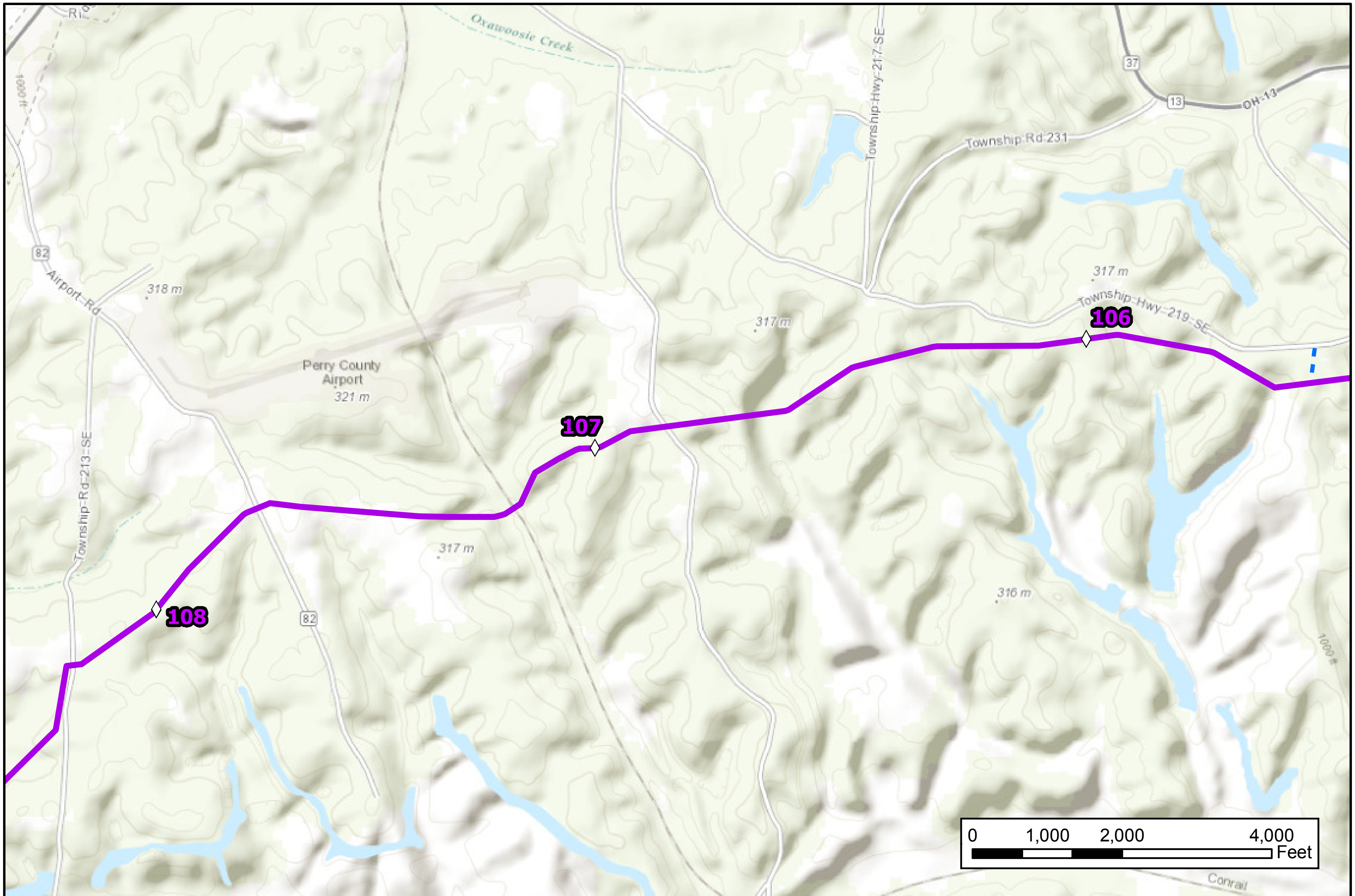
	LEX		Access Road
	LEX1		Suction Line
	R-801 Loop		Permanent Site Facility
	R-801 Loop		Temporary Workspace
	R-501 Abandonment		Pipe Yards
	Main line Valve	◊	Milepost

Appendix B-38
Leach XPress
Project Overview



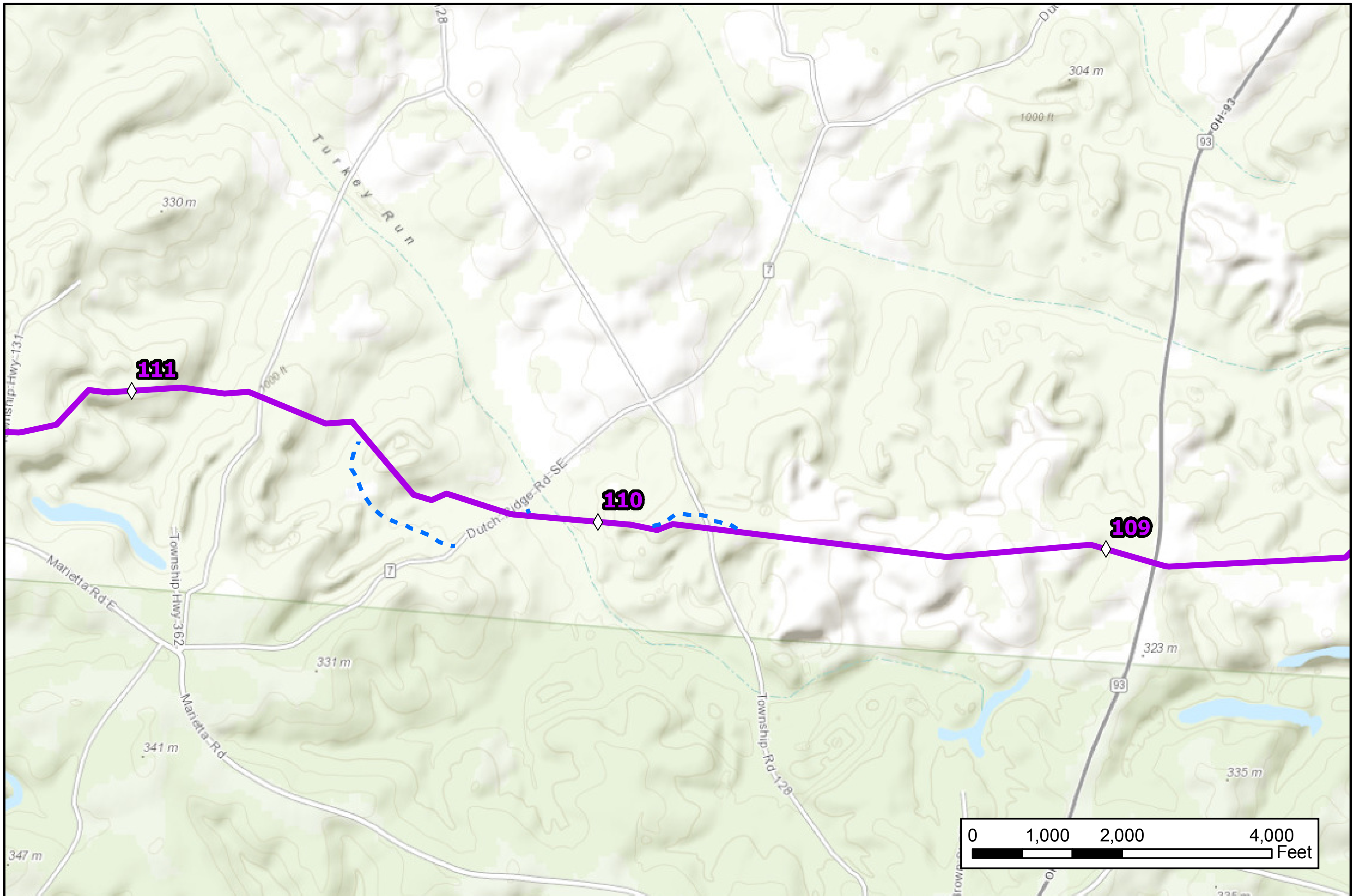
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-39
Leach XPress
Project Overview



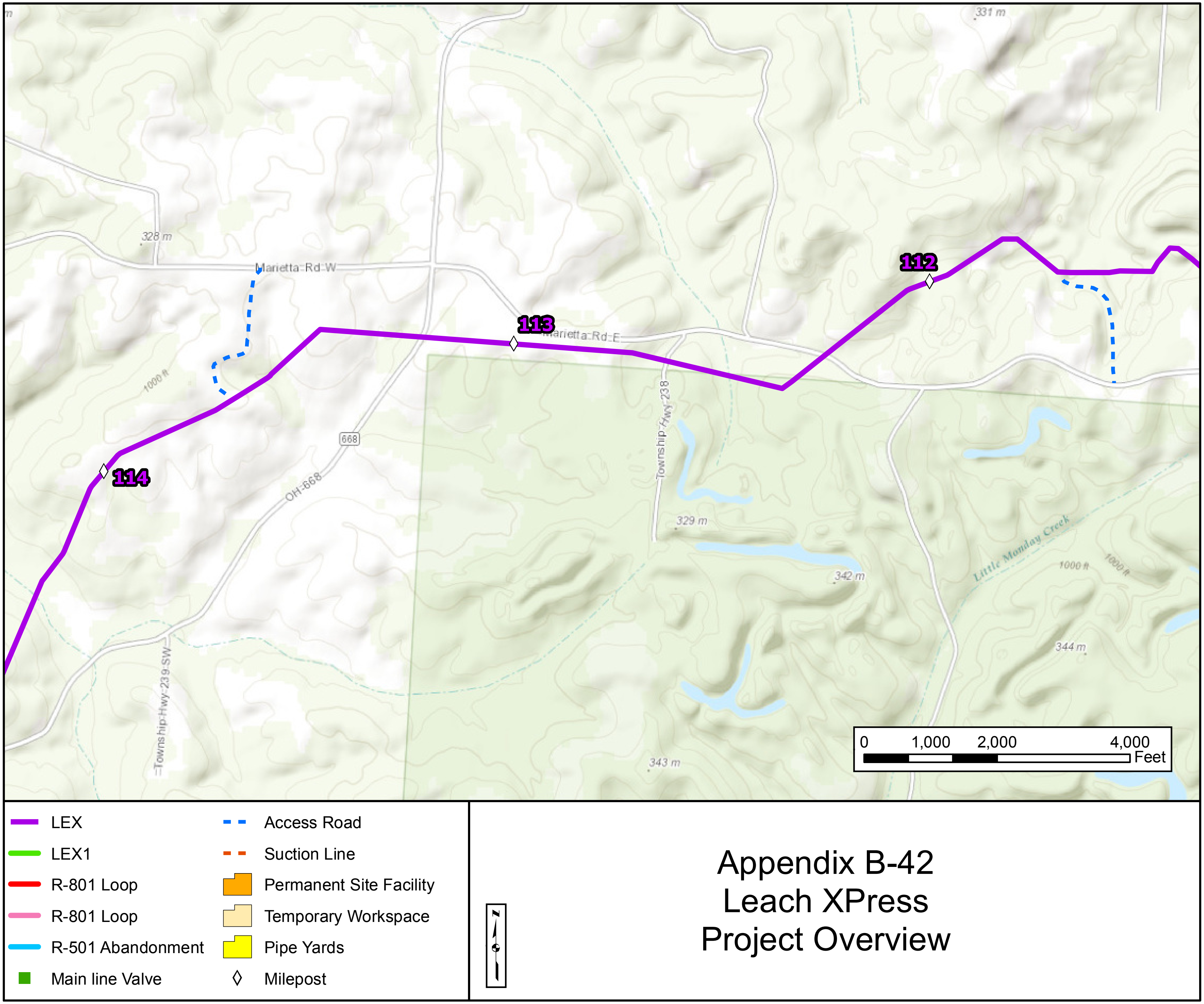
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-40
Leach XPress
Project Overview

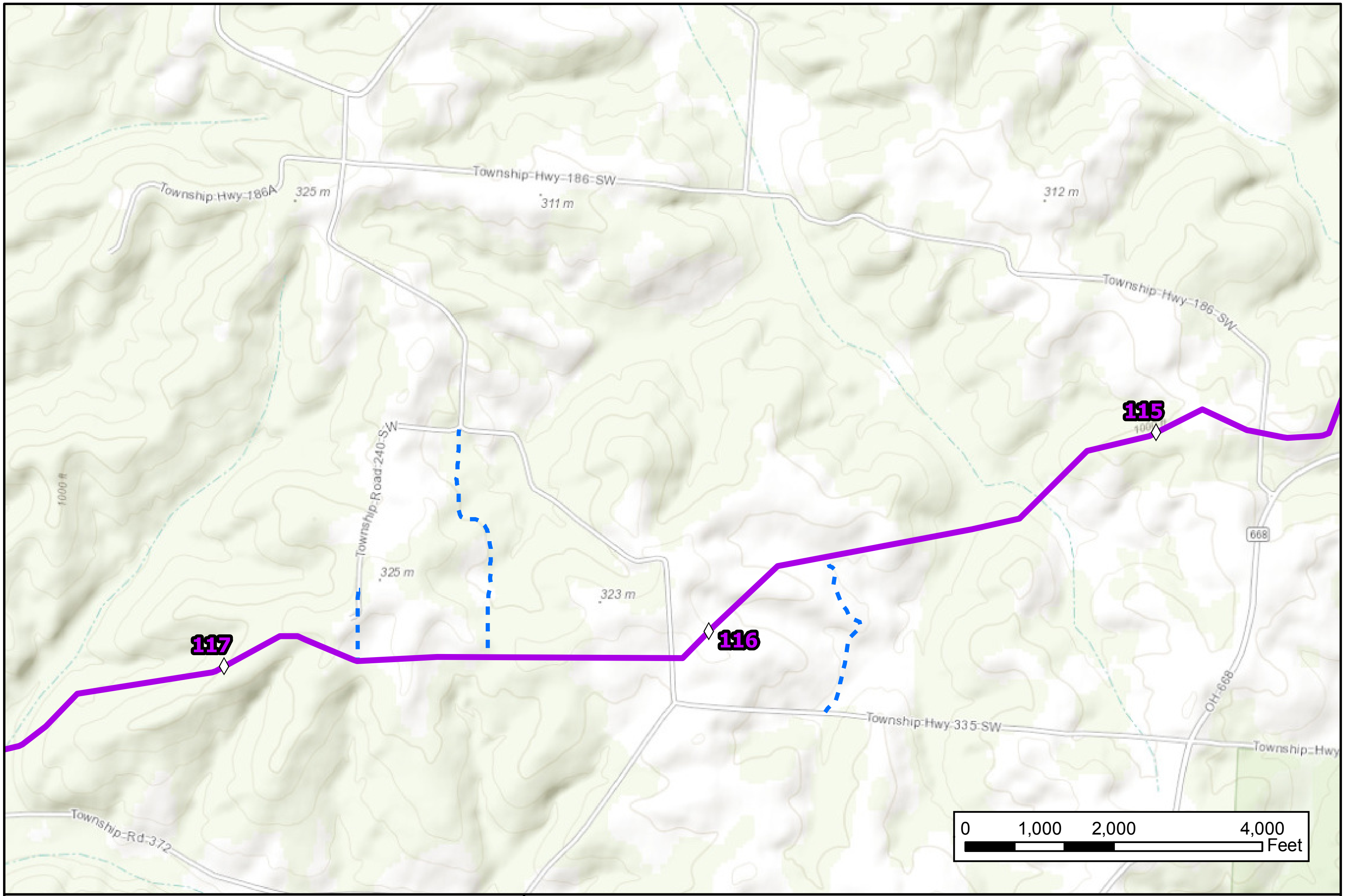


LEX		Access Road	
LEX1		Suction Line	
R-801 Loop		Permanent Site Facility	
R-801 Loop		Temporary Workspace	
R-501 Abandonment		Pipe Yards	
Main line Valve		Milepost	

Appendix B-41
Leach XPress
Project Overview

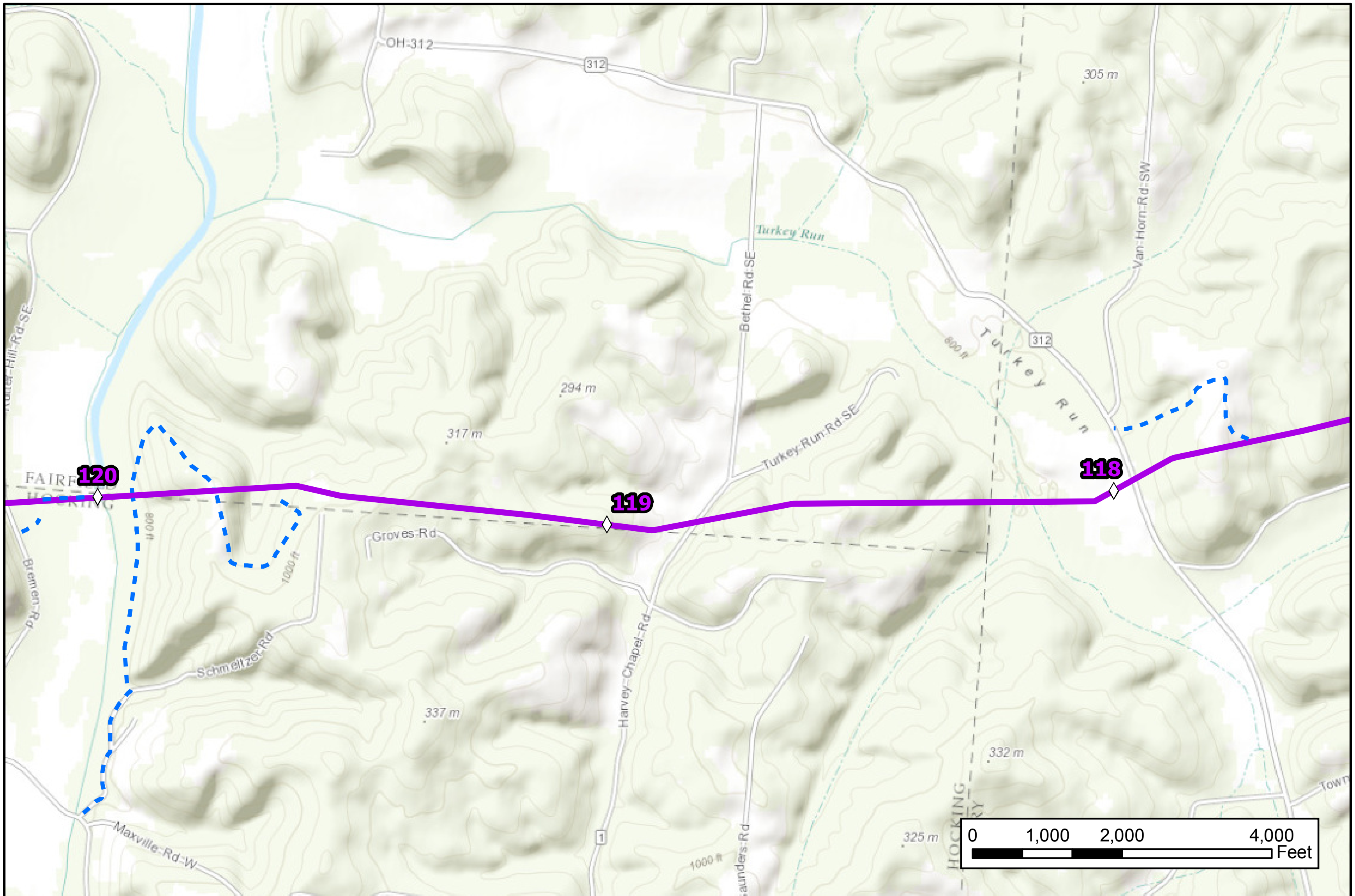


Appendix B-42
Leach XPress
Project Overview



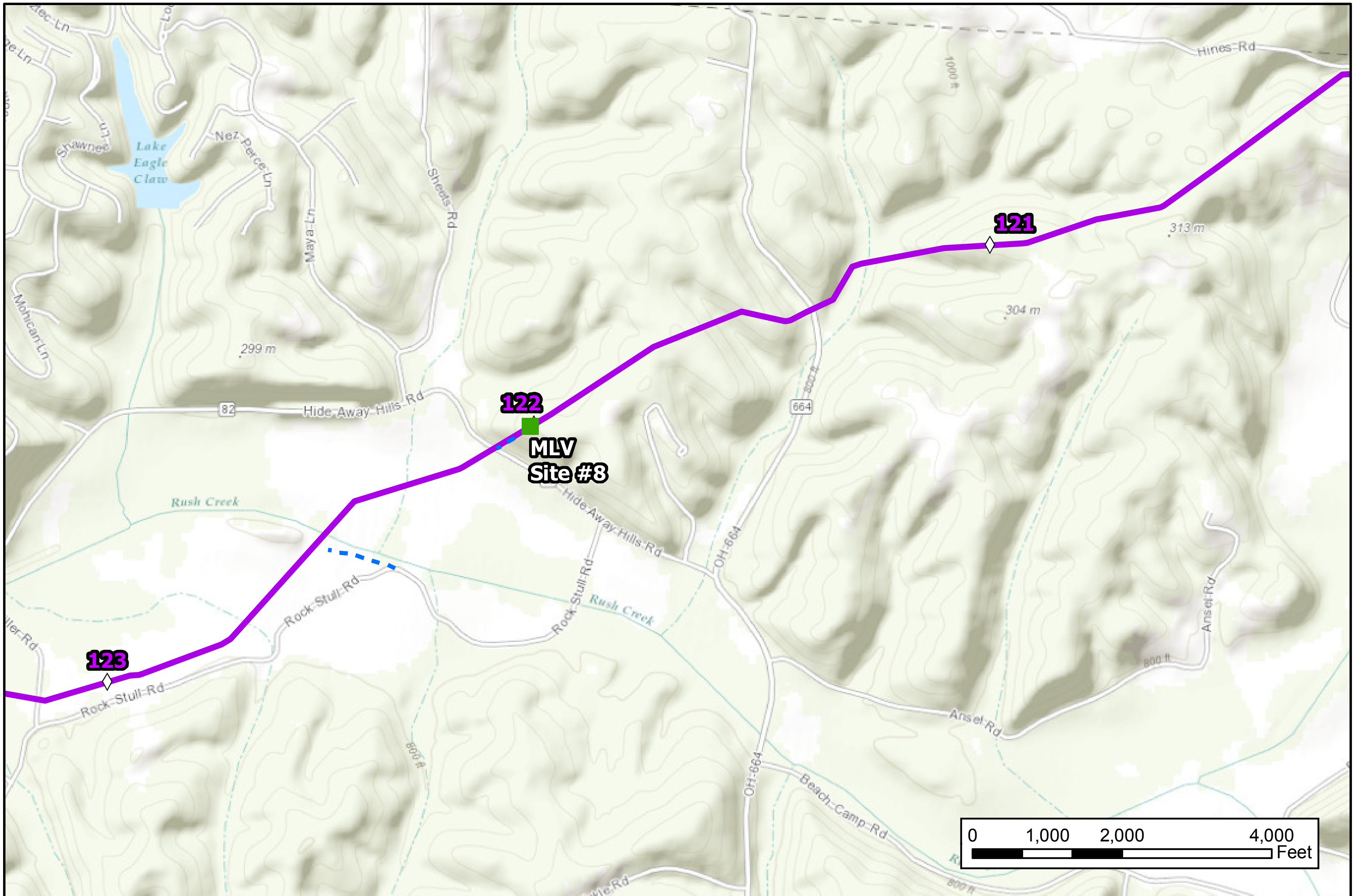
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-43
Leach XPress
Project Overview



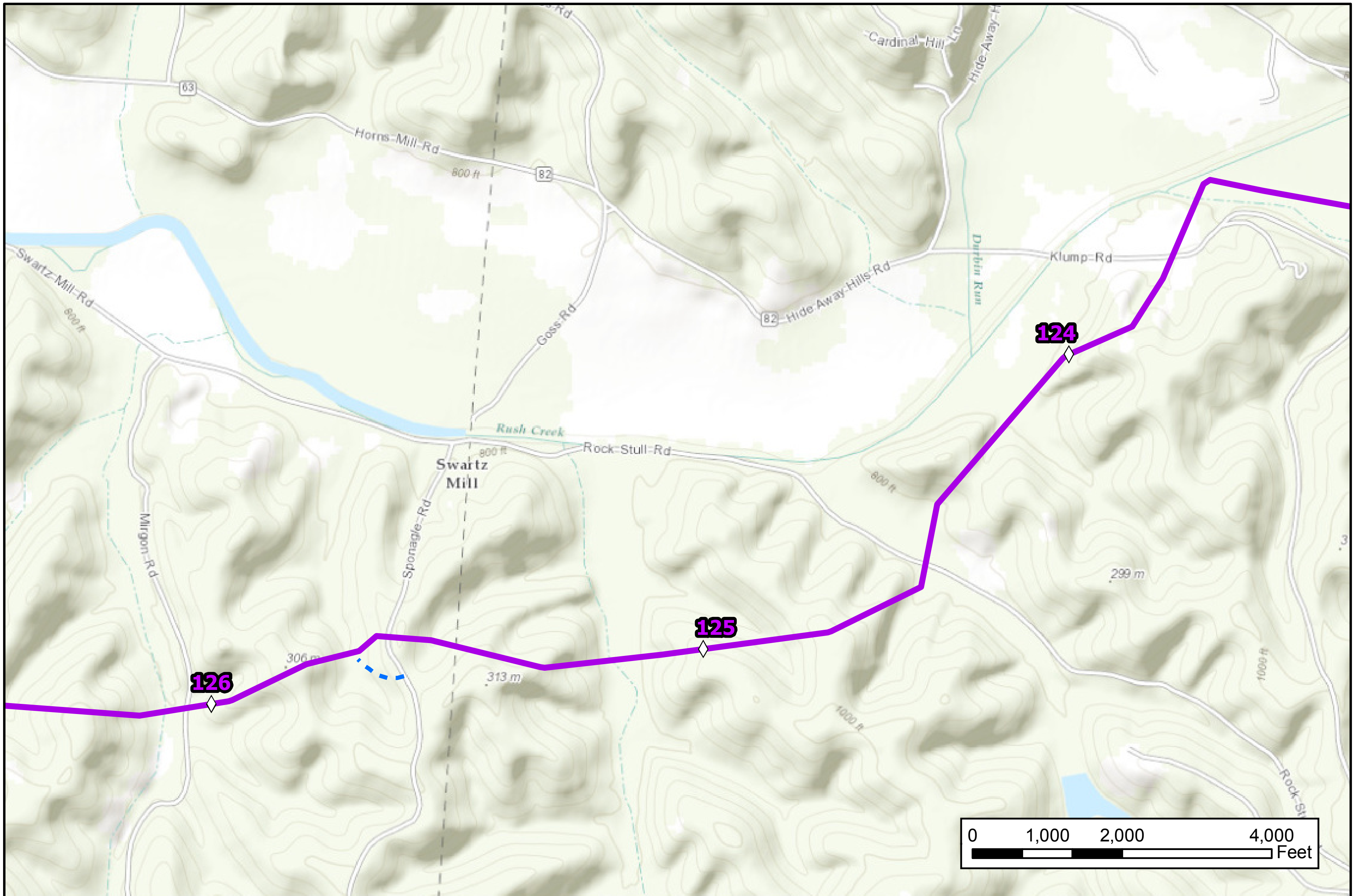
LEX	Access Road
LEX1	Suction Line
R-801 Loop	Permanent Site Facility
R-801 Loop	Temporary Workspace
R-501 Abandonment	Pipe Yards
Main line Valve	Milepost

Appendix B-44
Leach XPress
Project Overview



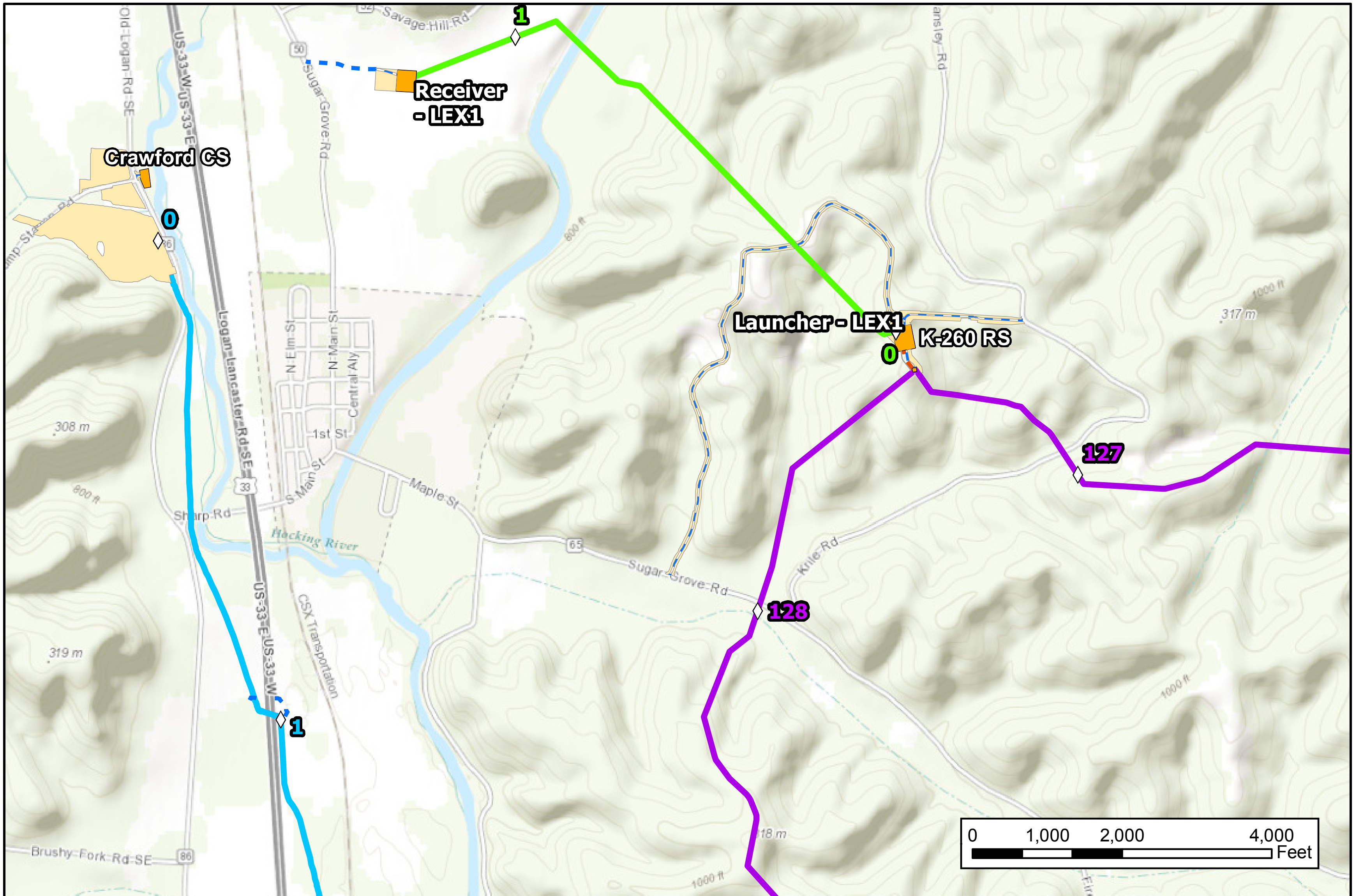
	LEX		Access Road
	LEX1		Suction Line
	R-801 Loop		Permanent Site Facility
	R-801 Loop		Temporary Workspace
	R-501 Abandonment		Pipe Yards
	Main line Valve	◊	Milepost

Appendix B-45
Leach XPress
Project Overview



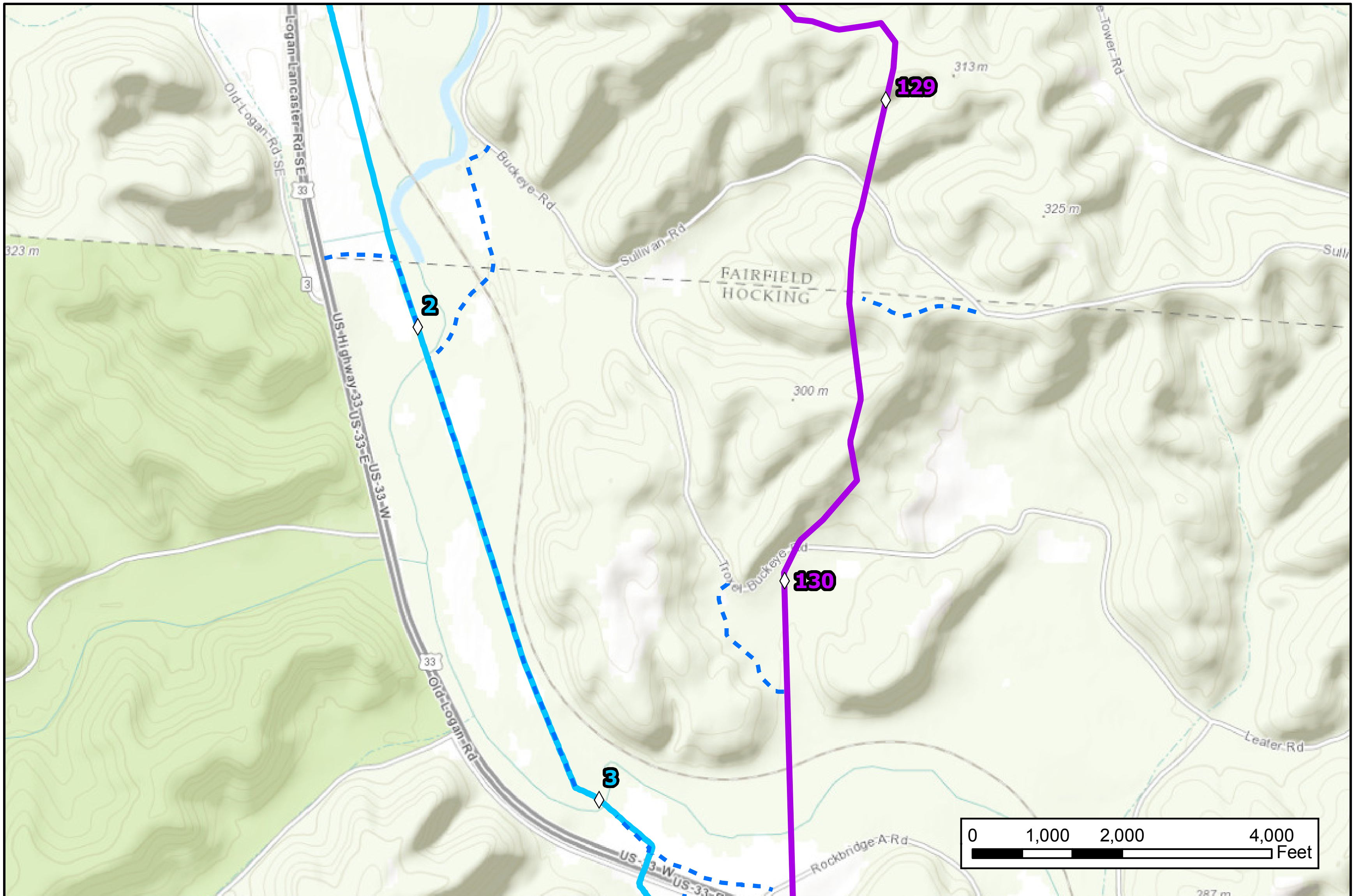
- LEX
- LEX1
- R-801 Loop
- R-801 Loop
- R-501 Abandonment
- Main line Valve
- Access Road
- Suction Line
- Permanent Site Facility
- Temporary Workspace
- Pipe Yards
- Milepost

Appendix B-46
Leach XPress
Project Overview



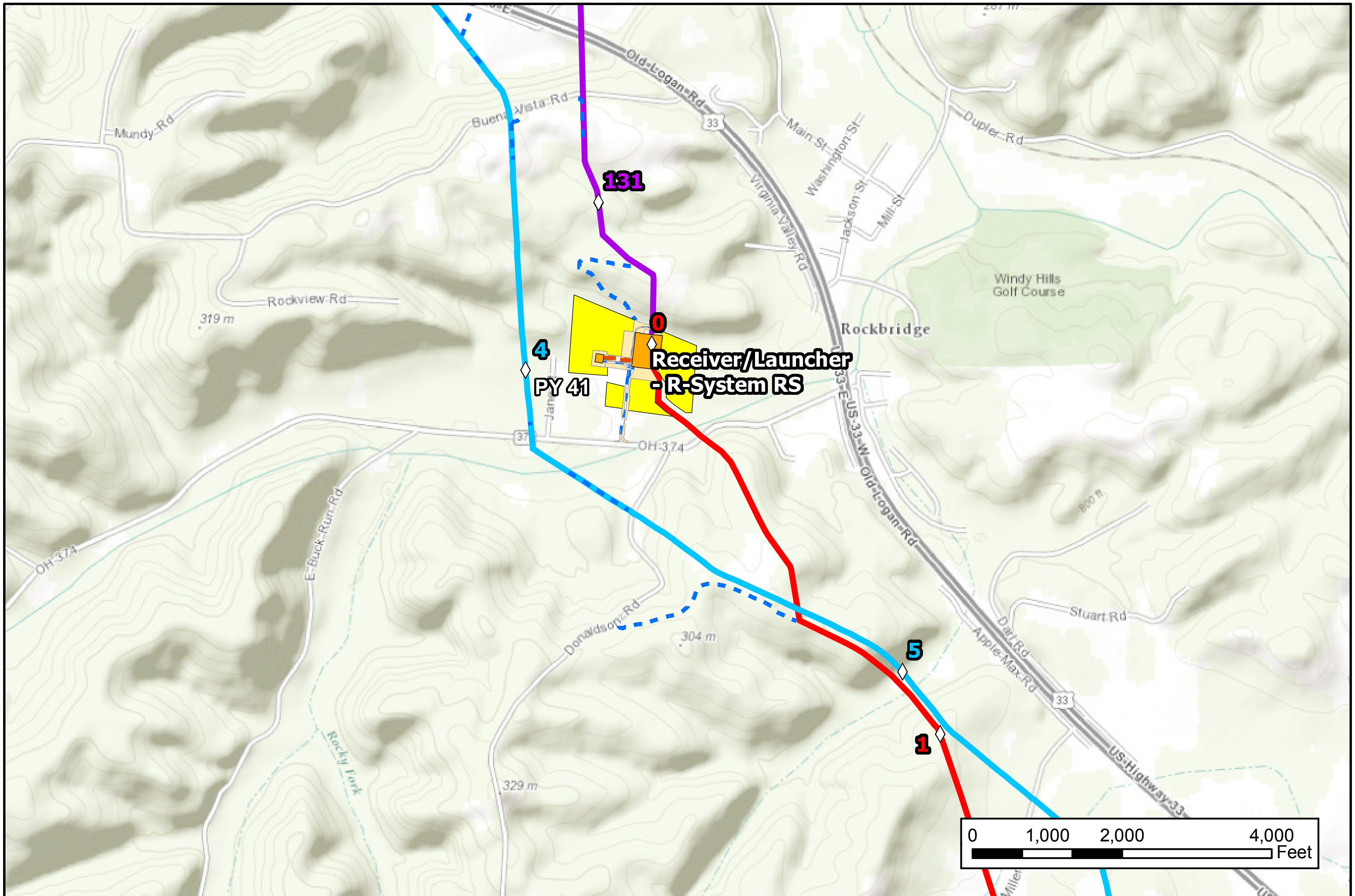
- LEX
- LEX1
- R-801 Loop
- R-801 Loop
- R-501 Abandonment
- Main line Valve
- Access Road
- Suction Line
- Permanent Site Facility
- Temporary Workspace
- Pipe Yards
- Milepost

Appendix B-47
Leach XPress
Project Overview



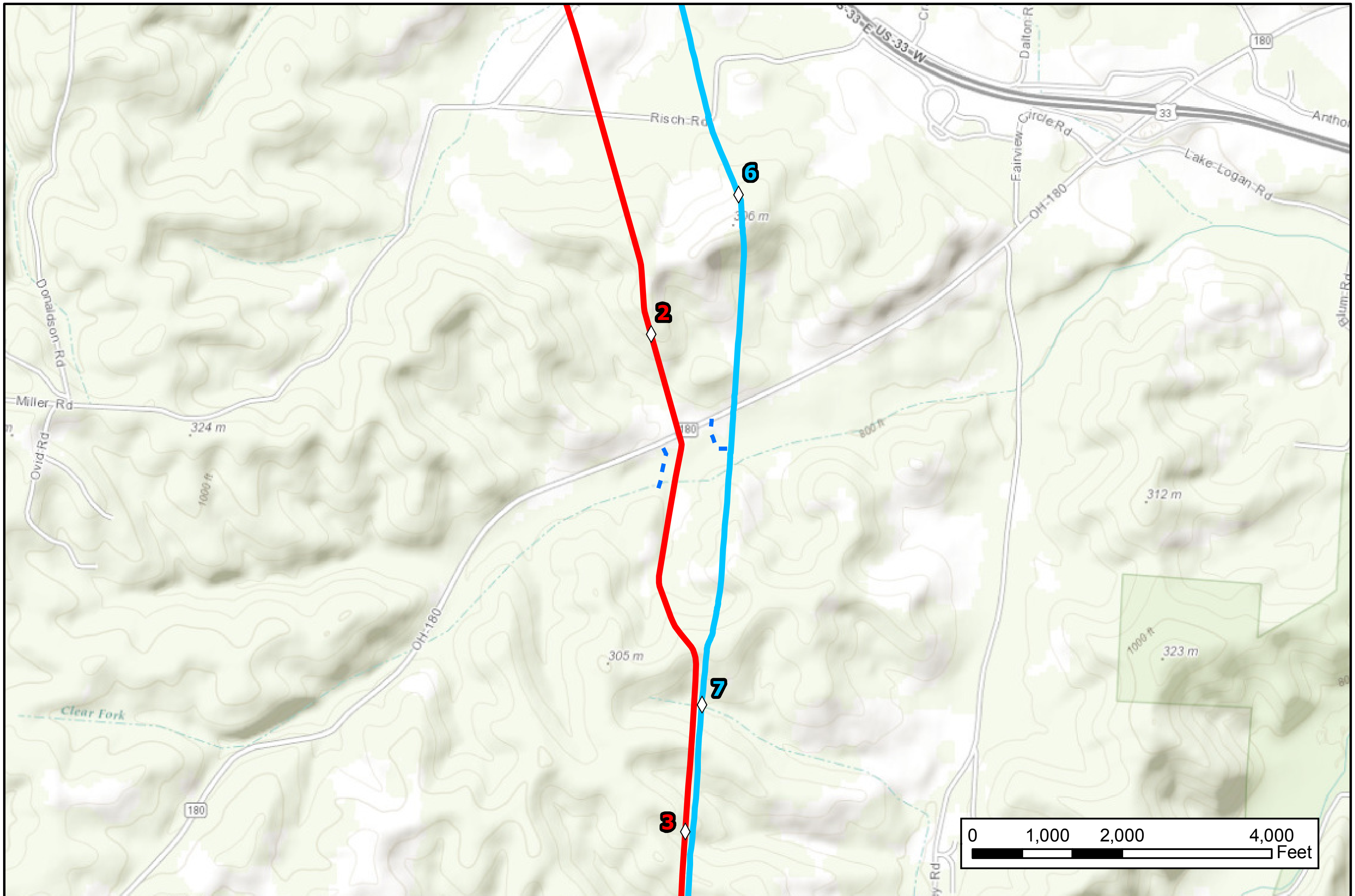
LEX	Access Road
LEX1	Suction Line
R-801 Loop	Permanent Site Facility
R-801 Loop	Temporary Workspace
R-501 Abandonment	Pipe Yards
Main line Valve	Milepost

Appendix B-48
Leach XPress
Project Overview



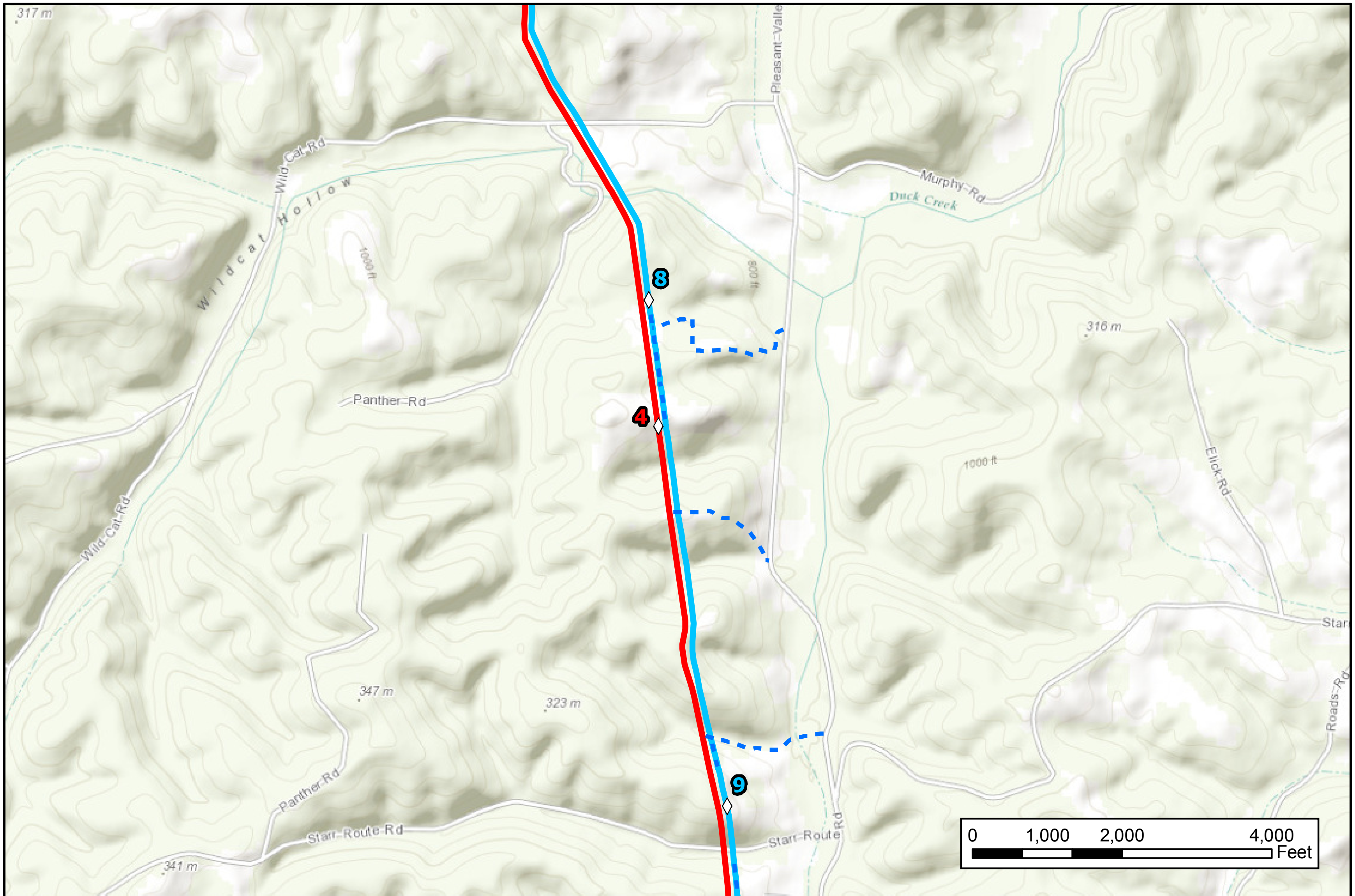
- LEX
- LEX1
- R-801 Loop
- R-801 Loop
- R-501 Abandonment
- Main line Valve
- Access Road
- Suction Line
- Permanent Site Facility
- Temporary Workspace
- Pipe Yards
- Milepost

Appendix B-49
Leach XPress
Project Overview



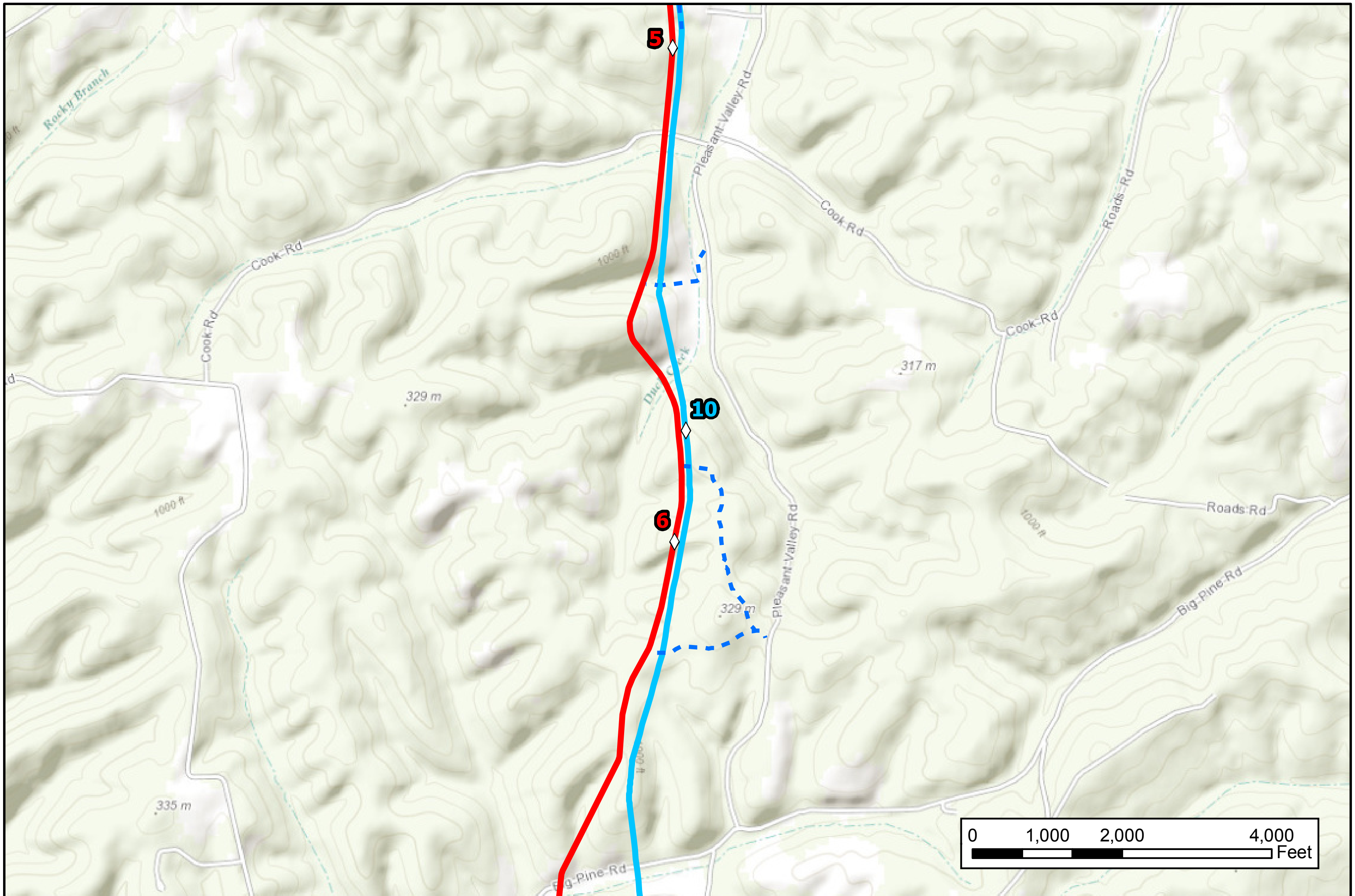
LEX	Access Road
LEX1	Suction Line
R-801 Loop	Permanent Site Facility
R-801 Loop	Temporary Workspace
R-501 Abandonment	Pipe Yards
Main line Valve	Milepost

Appendix B-50
Leach XPress
Project Overview



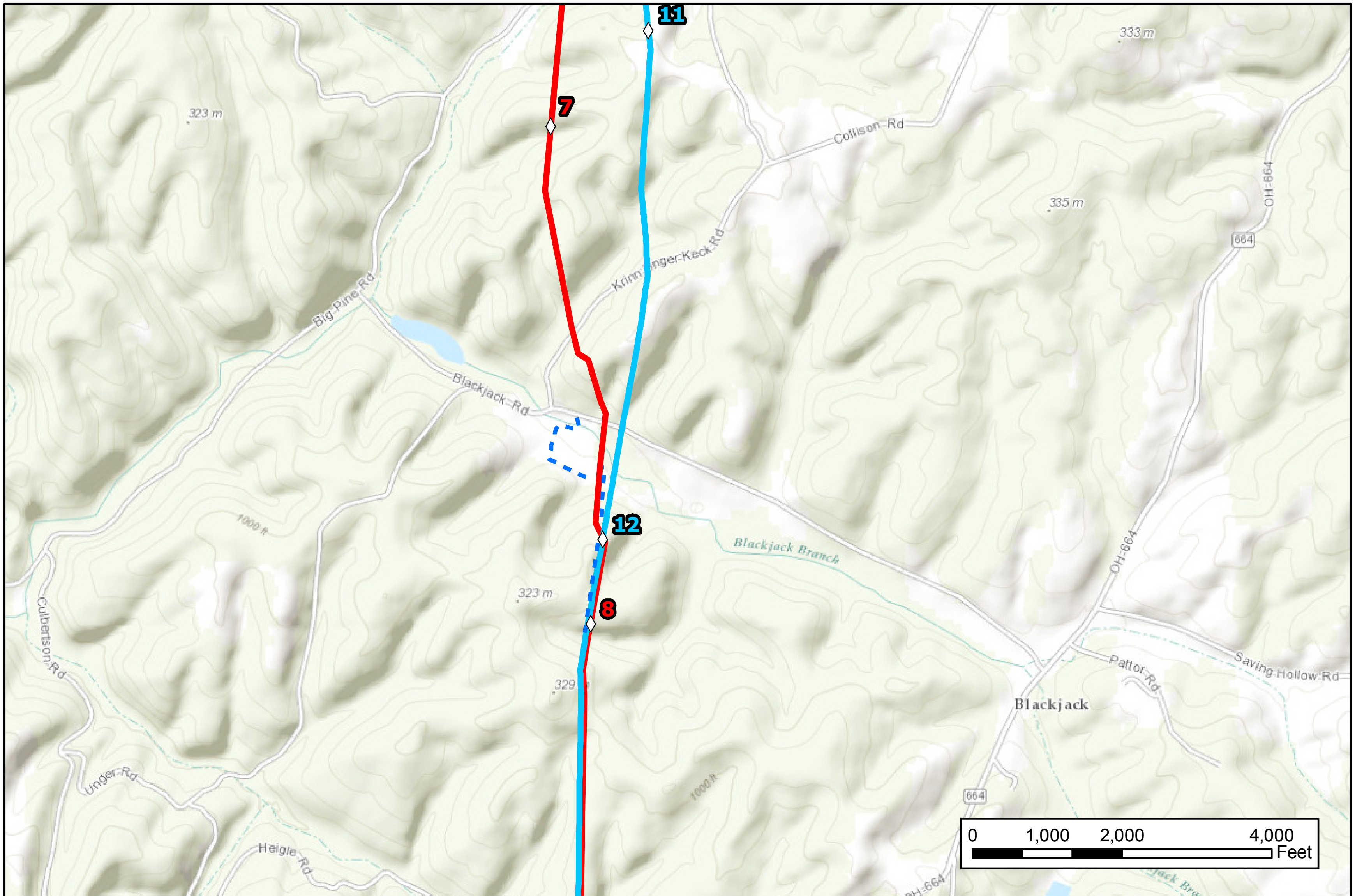
- LEX
- LEX1
- R-801 Loop
- R-801 Loop
- R-501 Abandonment
- Main line Valve
- Access Road
- Suction Line
- Permanent Site Facility
- Temporary Workspace
- Pipe Yards
- Milepost

Appendix B-51
Leach XPress
Project Overview



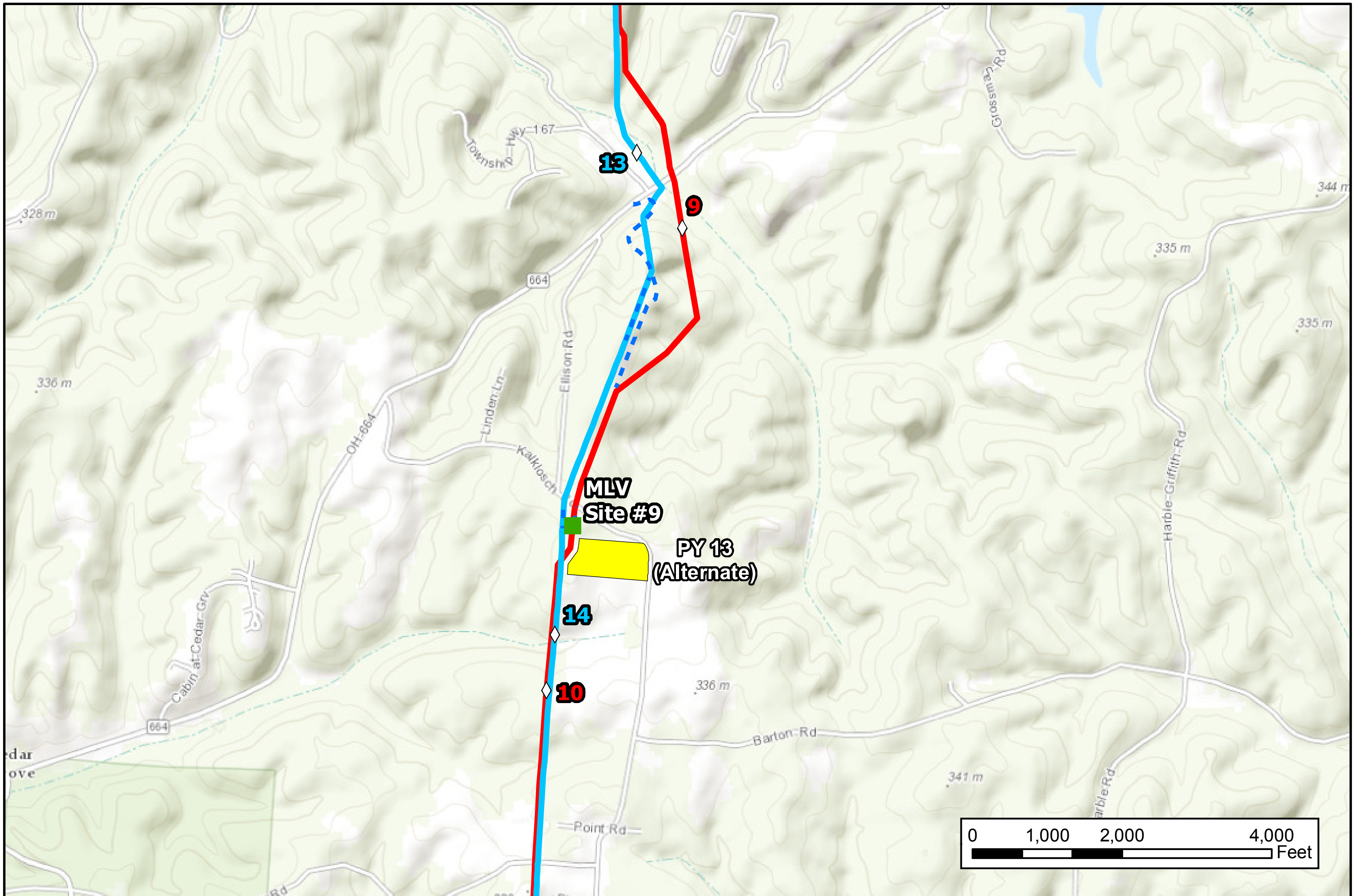
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-52
Leach XPress
Project Overview



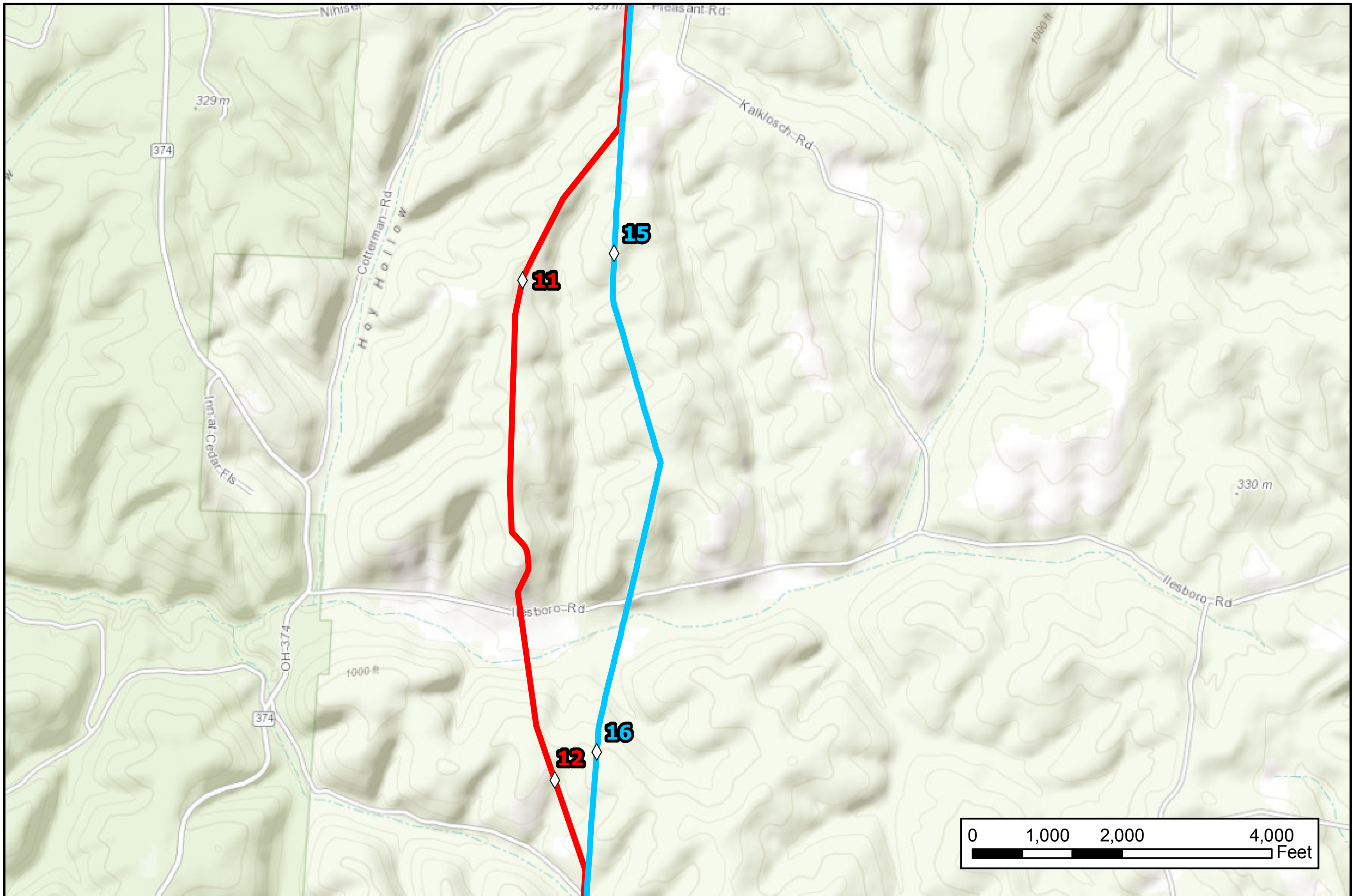
LEX		Access Road	
LEX1		Suction Line	
R-801 Loop		Permanent Site Facility	
R-801 Loop		Temporary Workspace	
R-501 Abandonment		Pipe Yards	
Main line Valve		Milepost	

Appendix B-53
Leach XPress
Project Overview



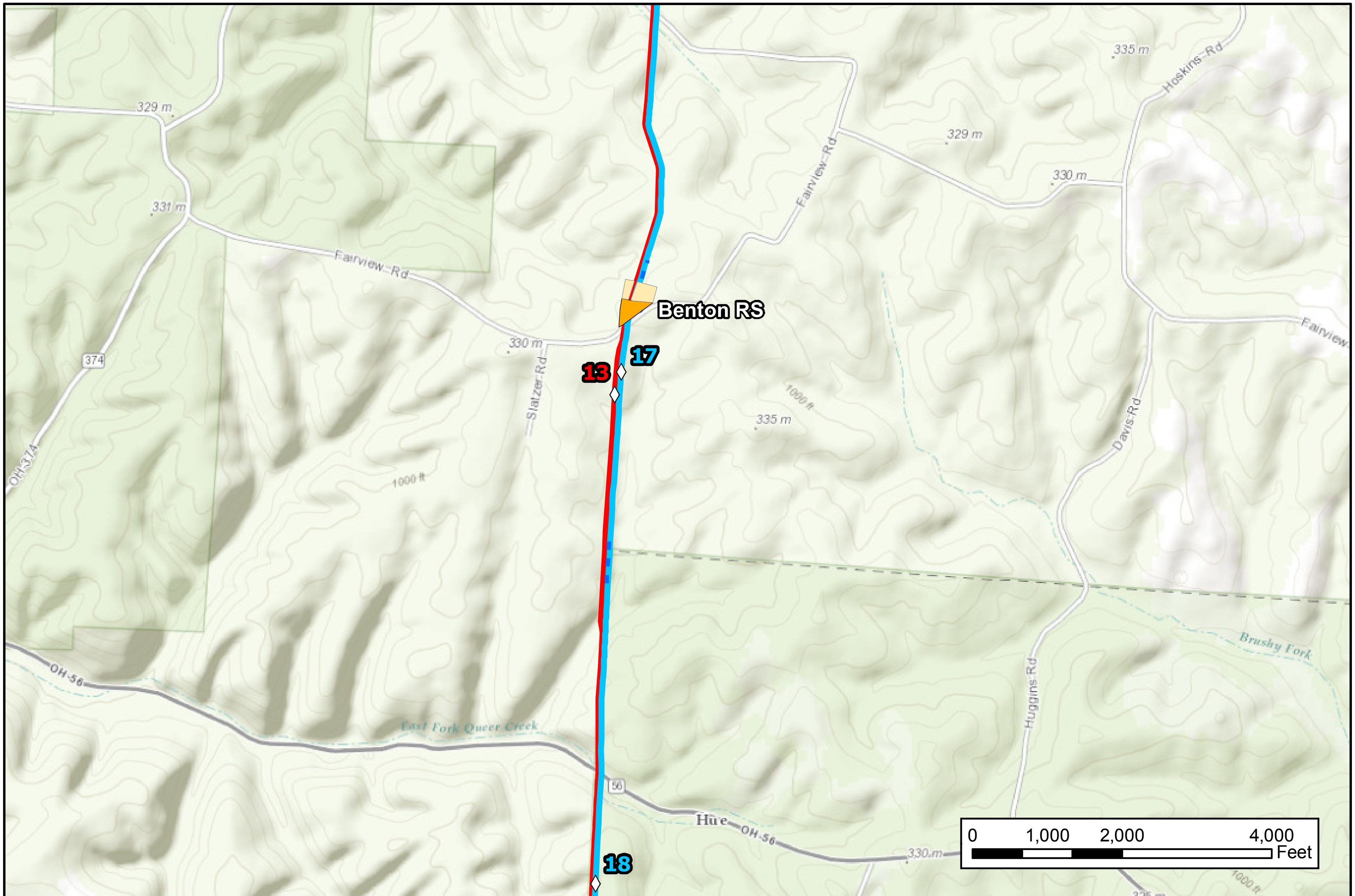
	LEX		Access Road
	LEX1		Suction Line
	R-801 Loop		Permanent Site Facility
	R-801 Loop		Temporary Workspace
	R-501 Abandonment		Pipe Yards
	Main line Valve	◊	Milepost

Appendix B-54
Leach XPress
Project Overview



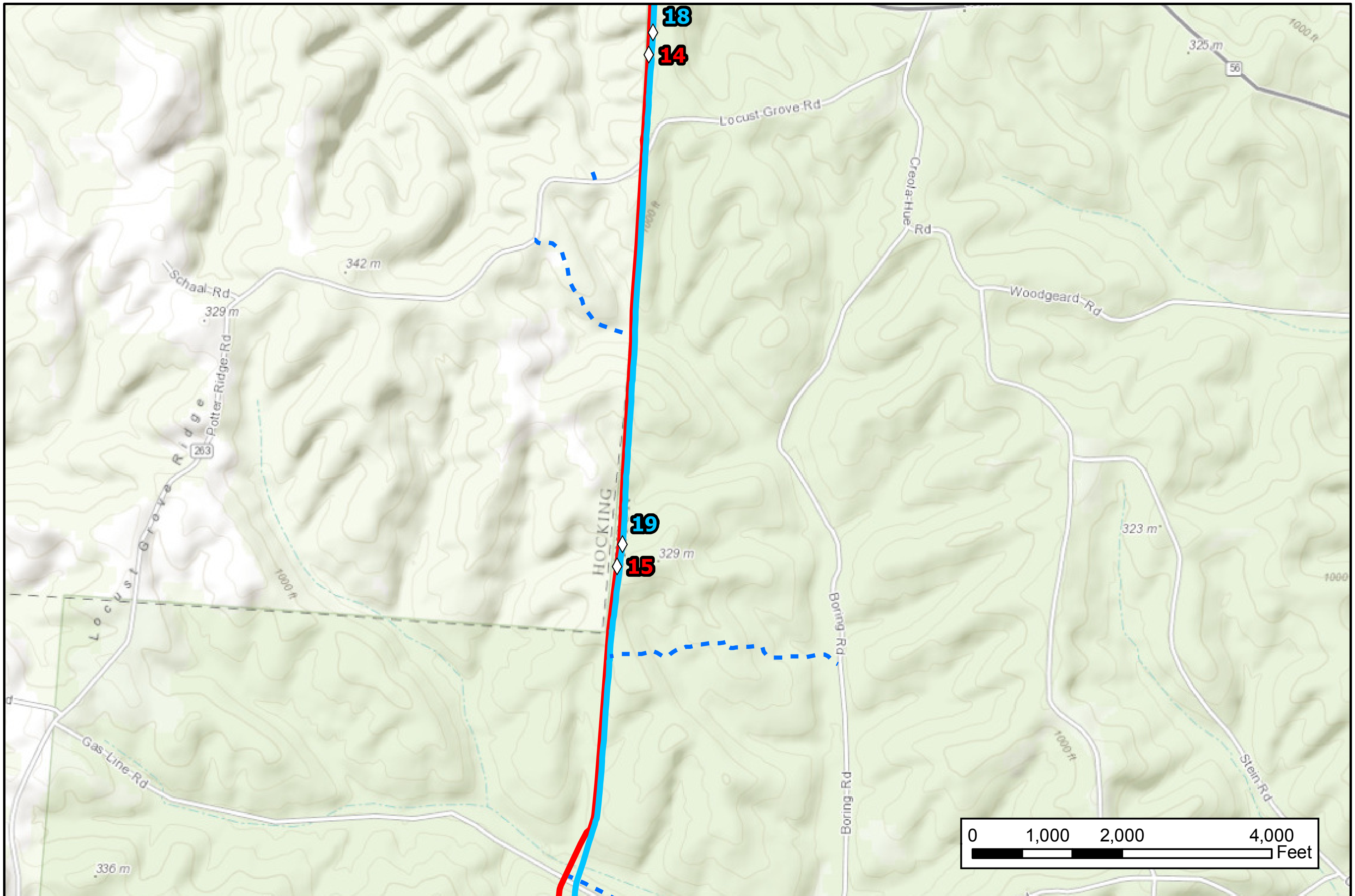
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-55
Leach XPress
Project Overview



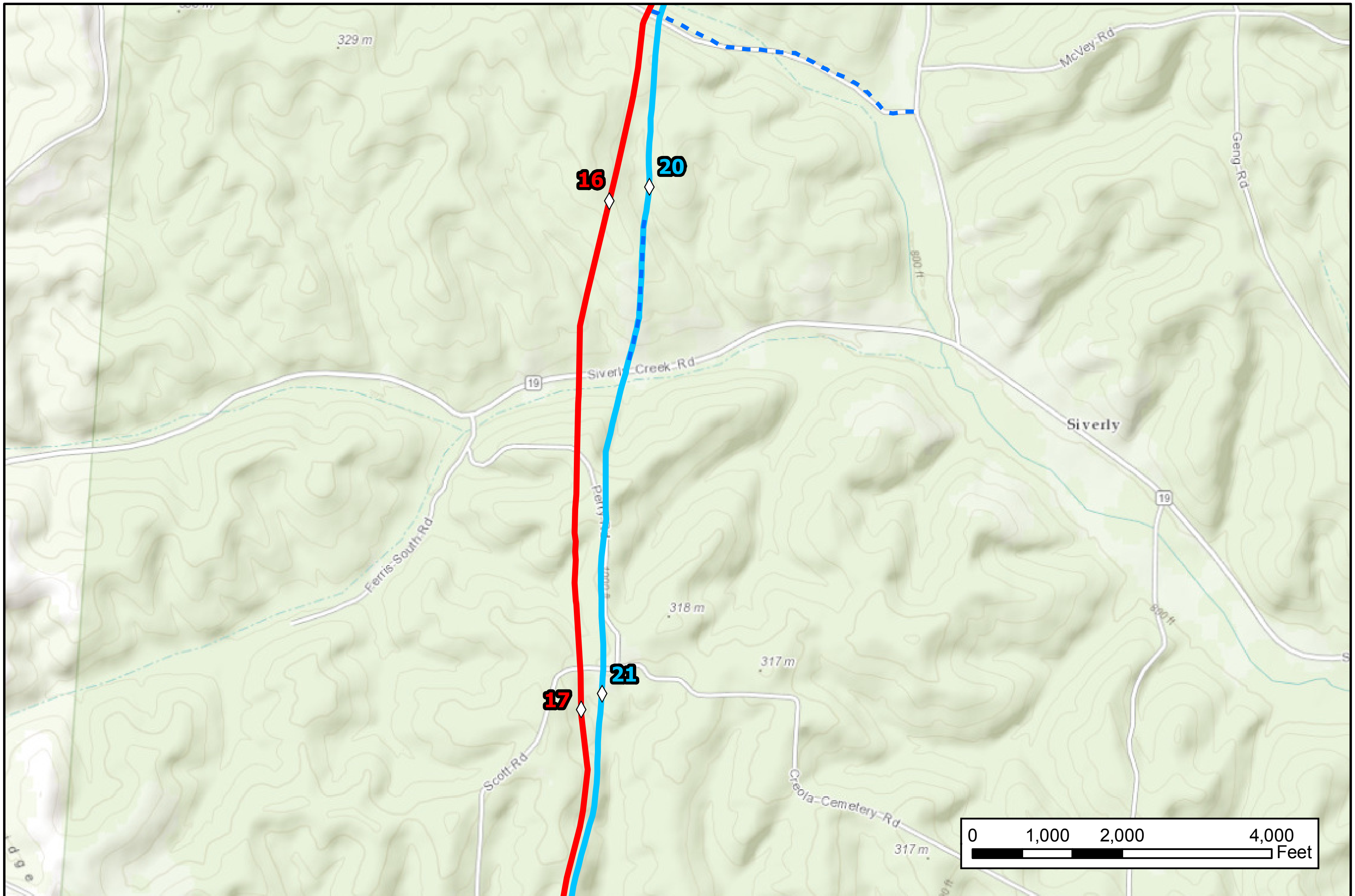
	LEX		Access Road
	LEX1		Suction Line
	R-801 Loop		Permanent Site Facility
	R-801 Loop		Temporary Workspace
	R-501 Abandonment		Pipe Yards
	Main line Valve	◊	Milepost

Appendix B-56
Leach XPress
Project Overview



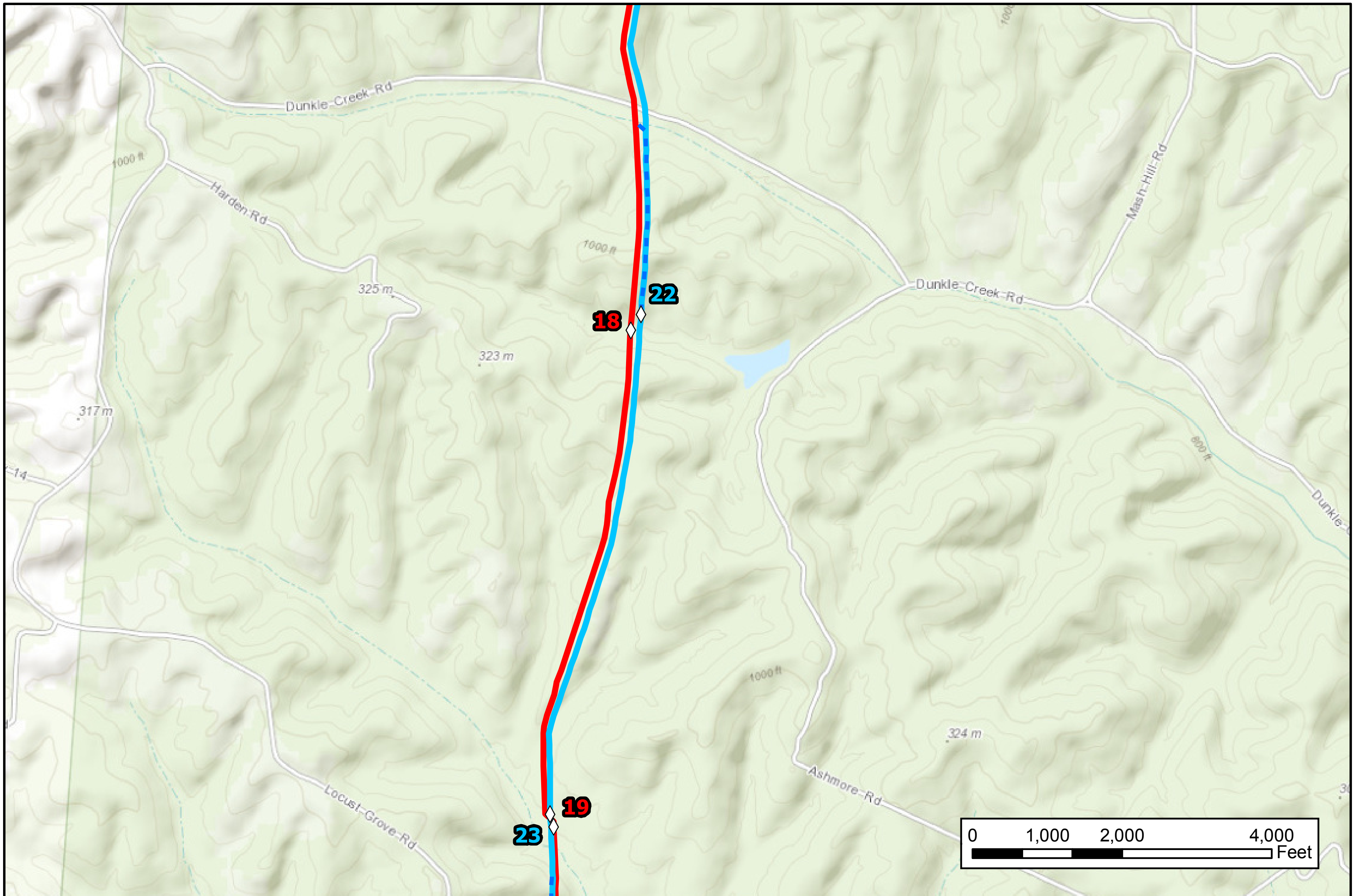
LEX	Access Road
LEX1	Suction Line
R-801 Loop	Permanent Site Facility
R-801 Loop	Temporary Workspace
R-501 Abandonment	Pipe Yards
Main line Valve	Milepost

Appendix B-57
Leach XPress
Project Overview



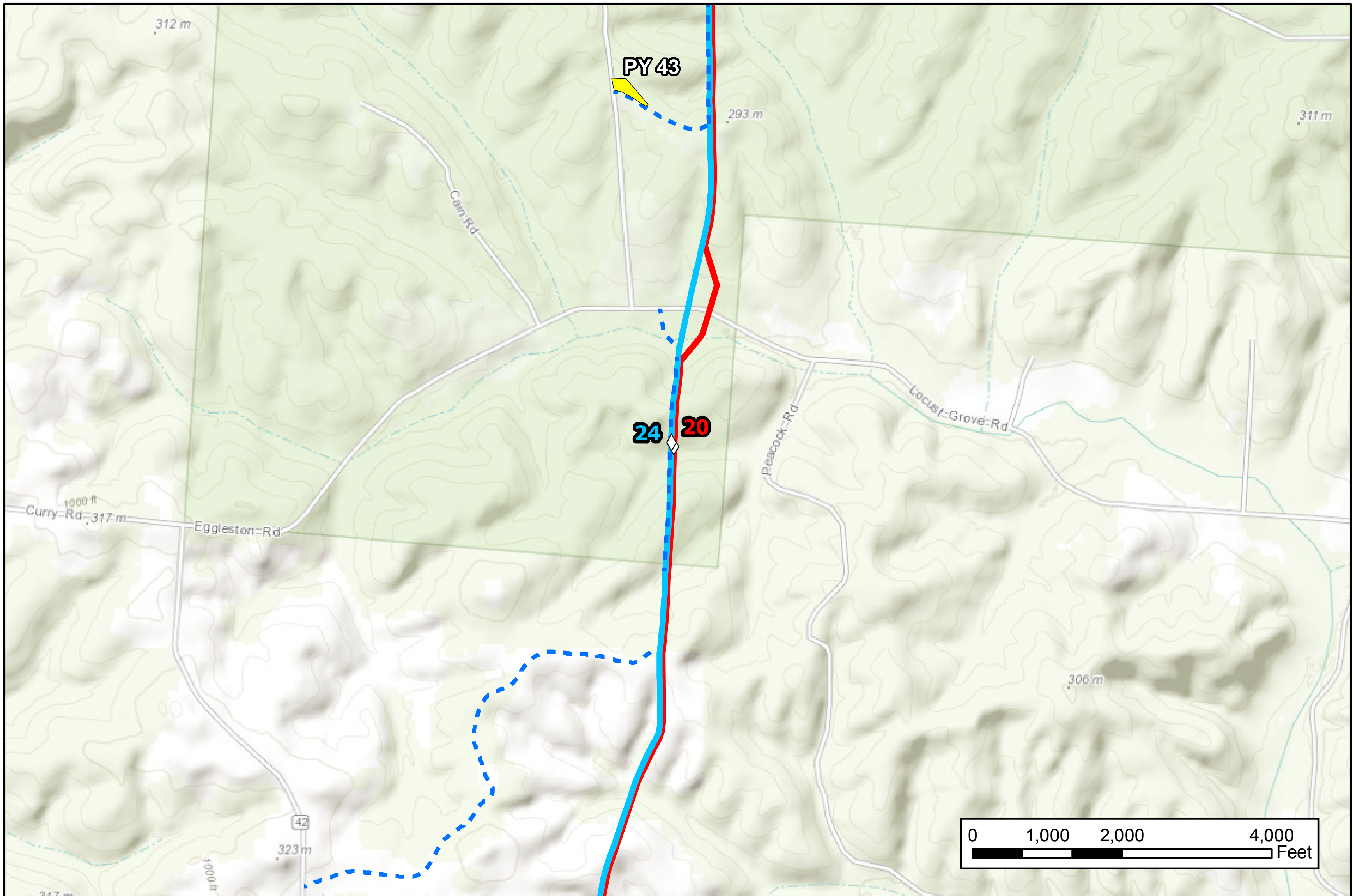
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-58
Leach XPress
Project Overview



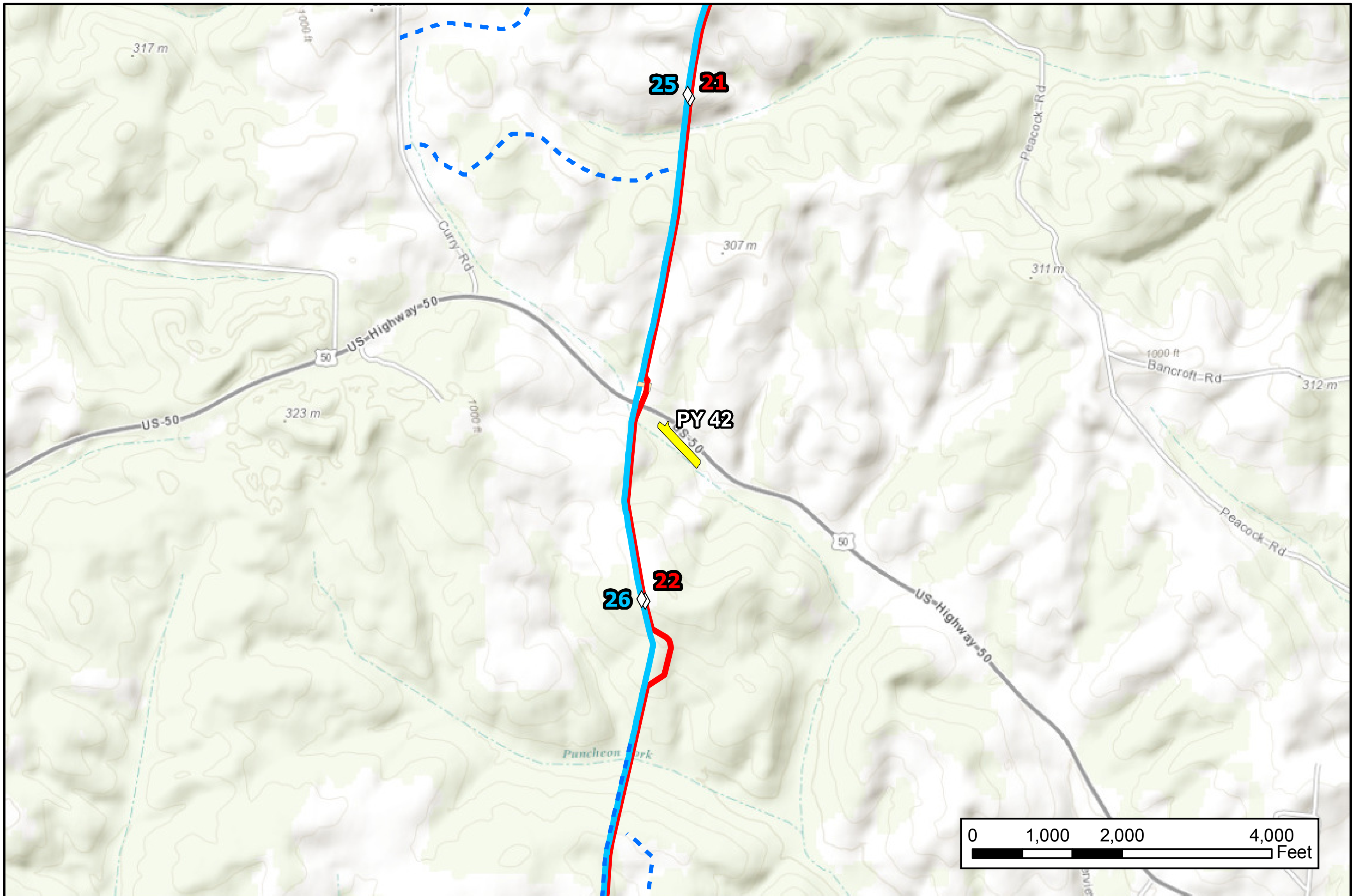
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-59
Leach XPress
Project Overview



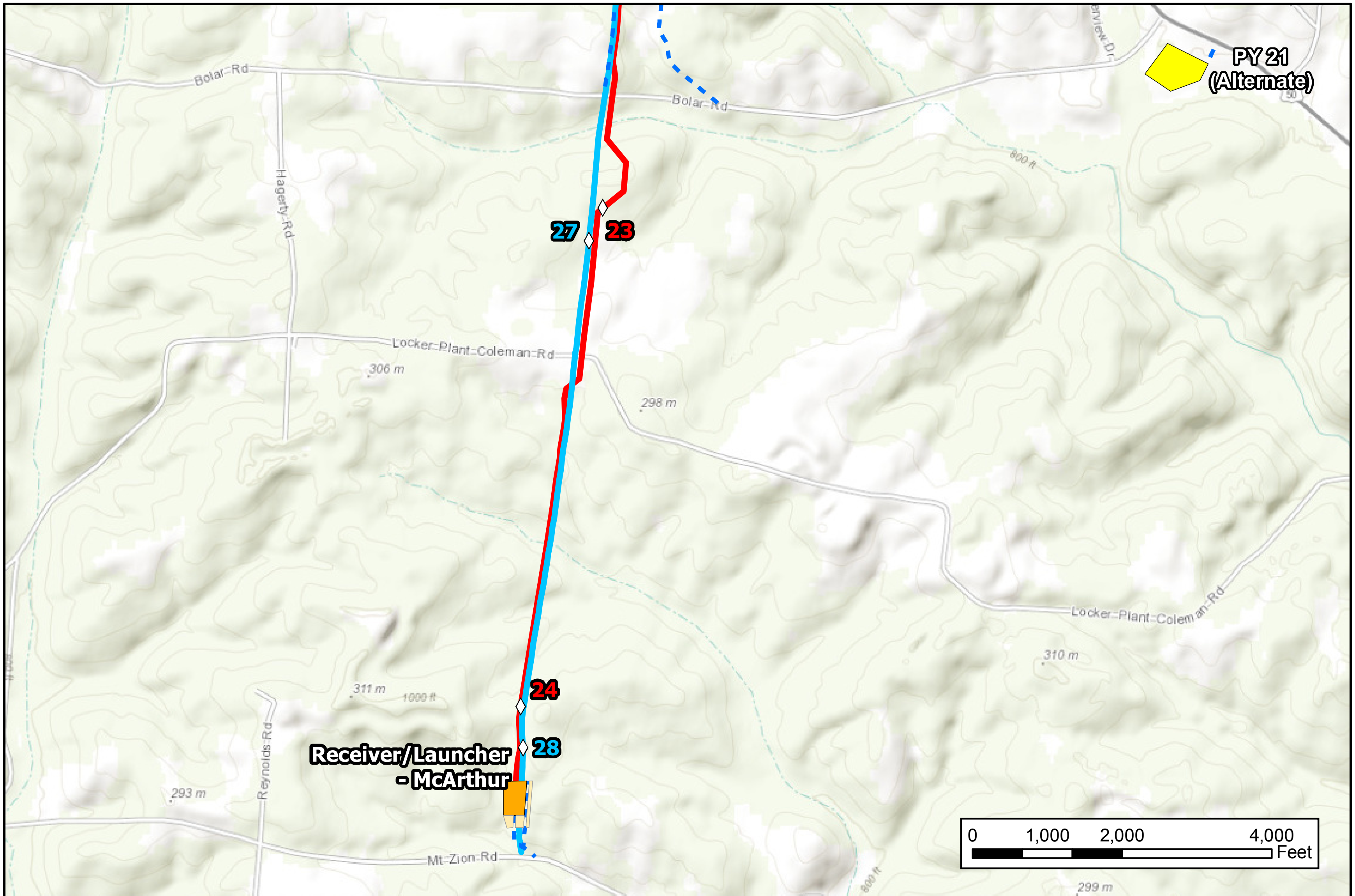
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-60
Leach XPress
Project Overview



LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-61
Leach XPress
Project Overview

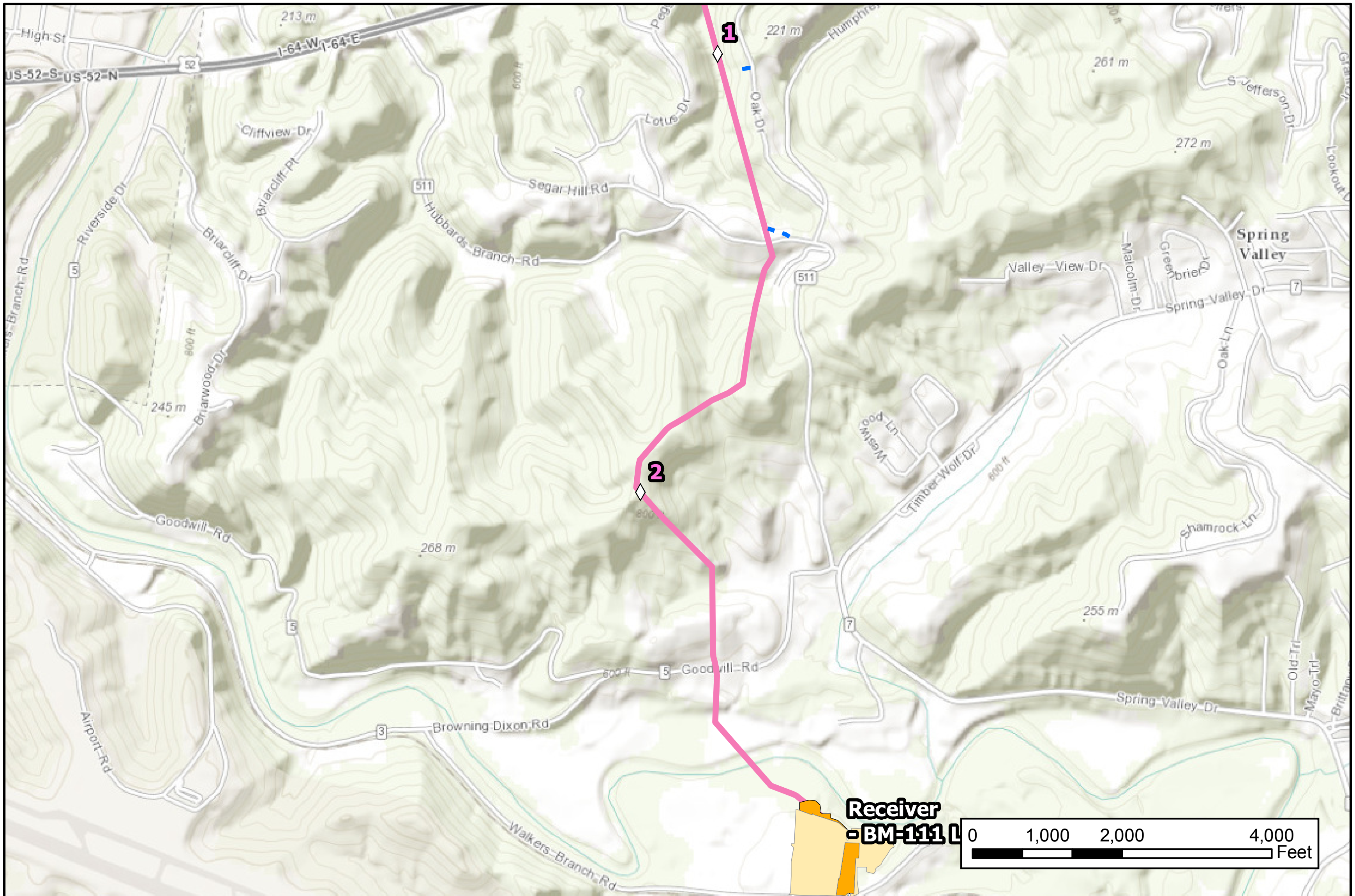


LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-62
Leach XPress
Project Overview

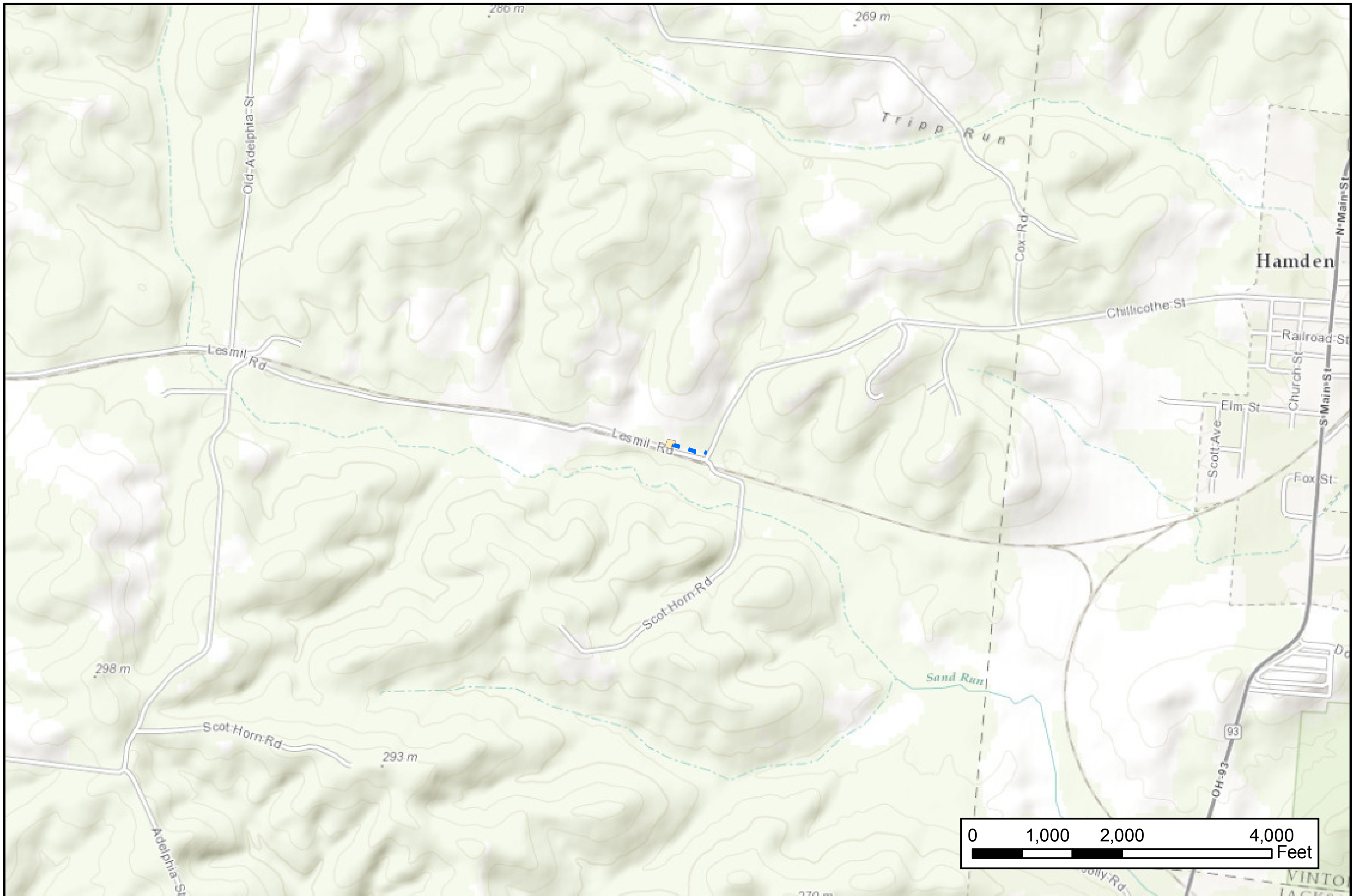
	LEX		Access Road
	LEX1		Suction Line
	R-801 Loop		Permanent Site Facility
	R-801 Loop		Temporary Workspace
	R-501 Abandonment		Pipe Yards
	Main line Valve	◊	Milepost

Appendix B-63
Leach XPress
Project Overview



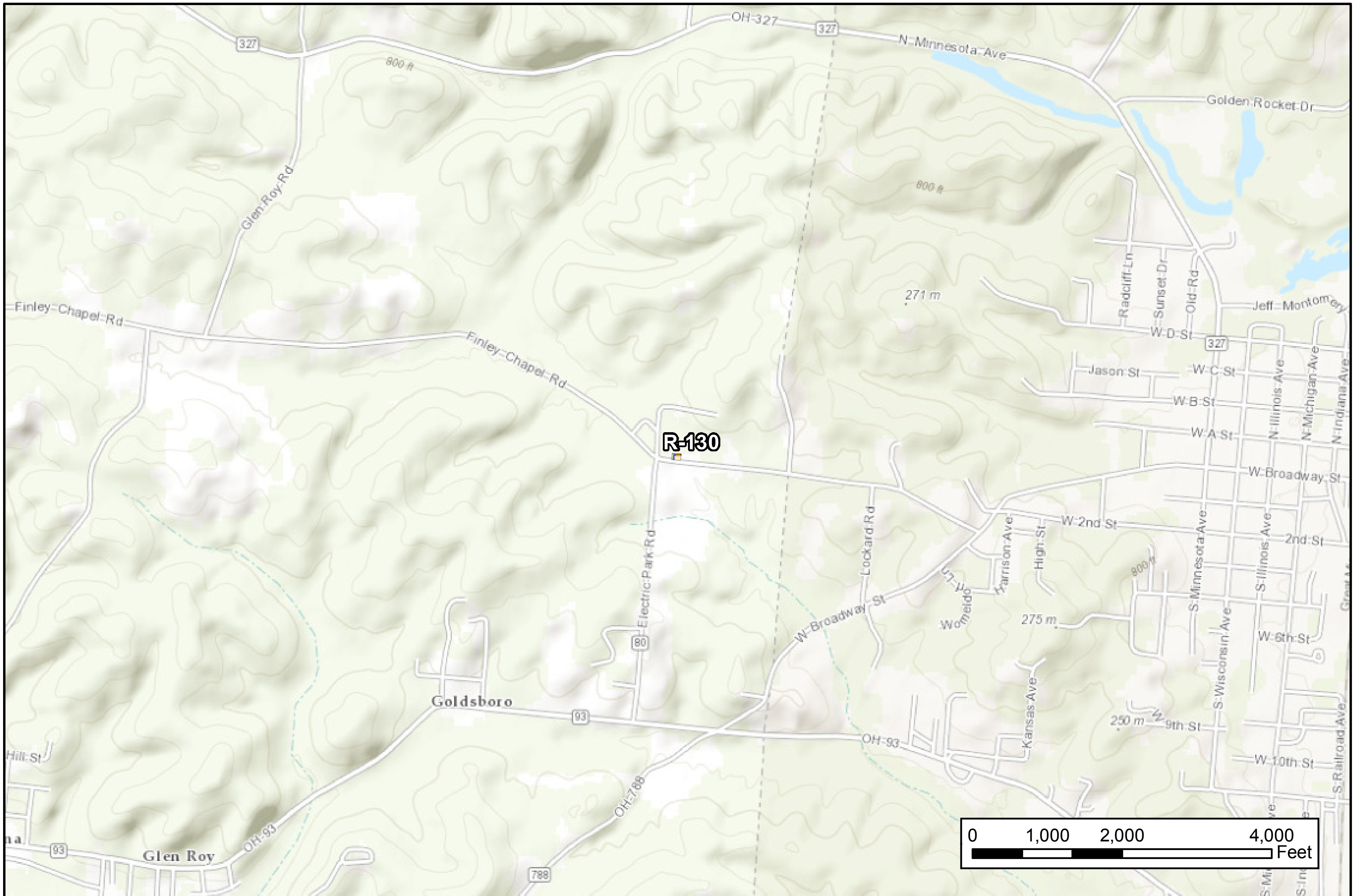
	LEX		Access Road
	LEX1		Suction Line
	R-801 Loop		Permanent Site Facility
	R-801 Loop		Temporary Workspace
	R-501 Abandonment		Pipe Yards
	Main line Valve	◊	Milepost

Appendix B-64
Leach XPress
Project Overview



LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-65
Leach XPress
Project Overview

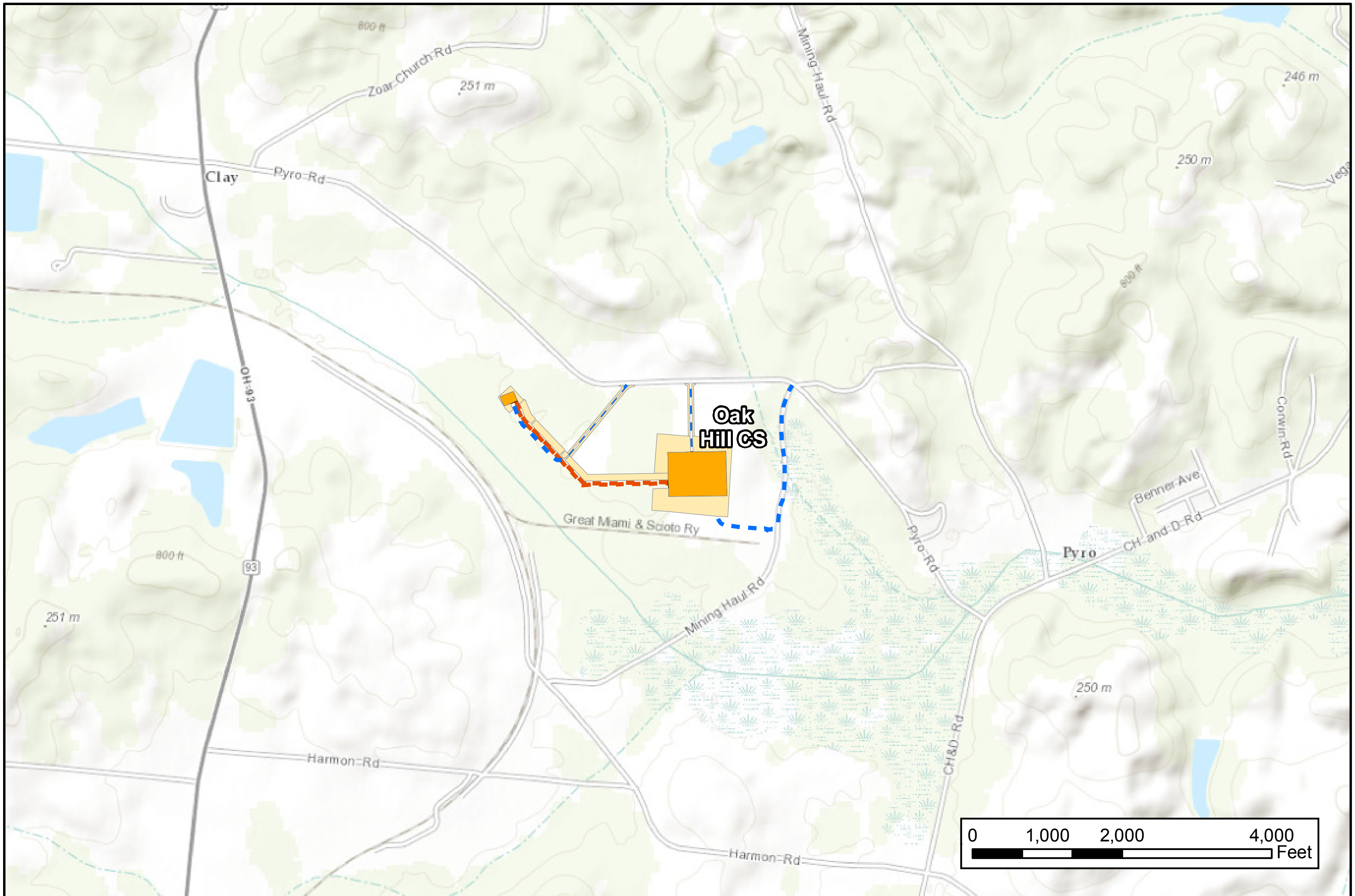


- LEX
- LEX1
- R-801 Loop
- R-801 Loop
- R-501 Abandonment
- Main line Valve
- Access Road
- Suction Line
- Permanent Site Facility
- Temporary Workspace
- Pipe Yards
- Milepost

Appendix B-66
Leach XPress
Project Overview

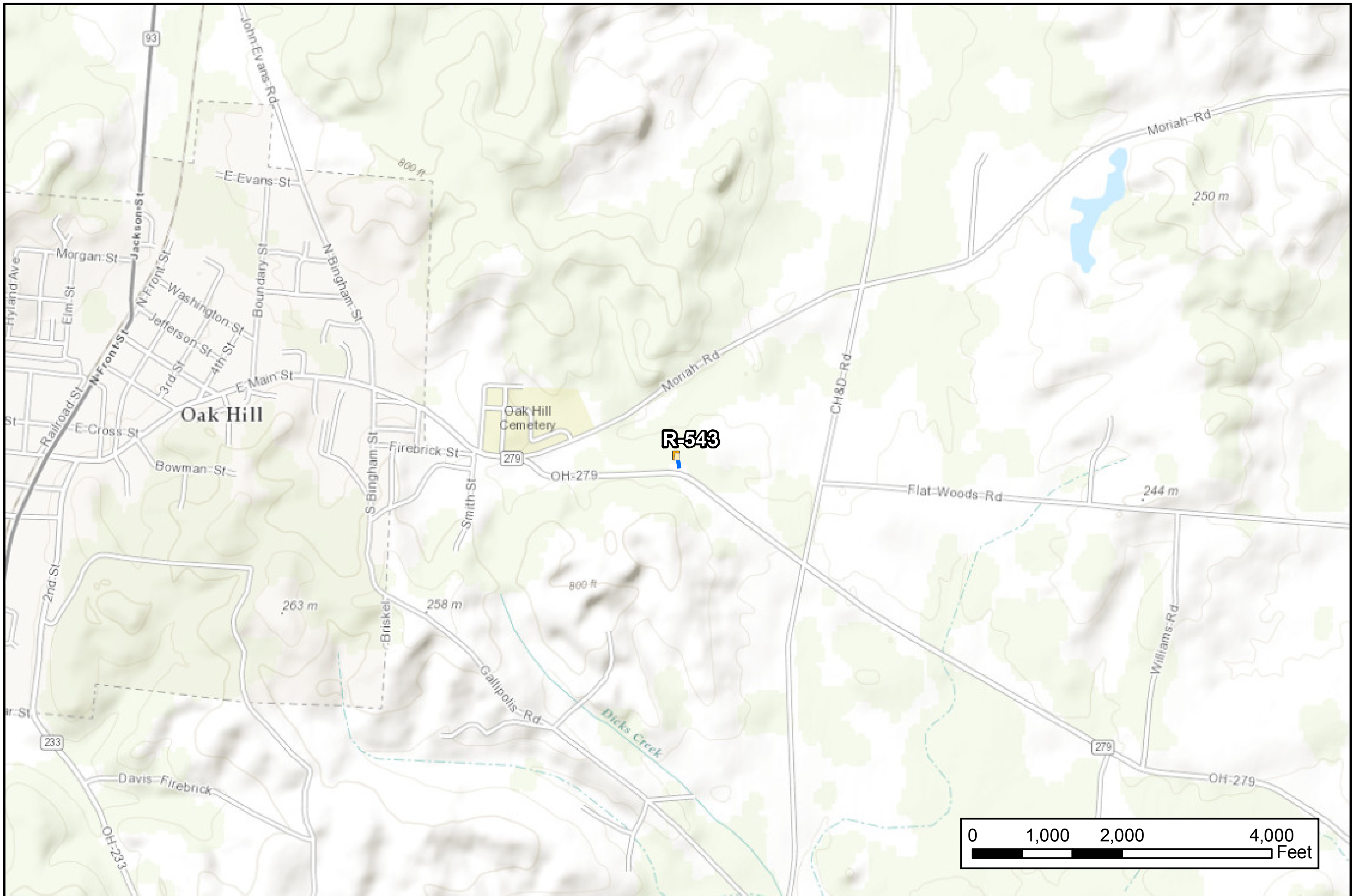
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-67
Leach XPress
Project Overview



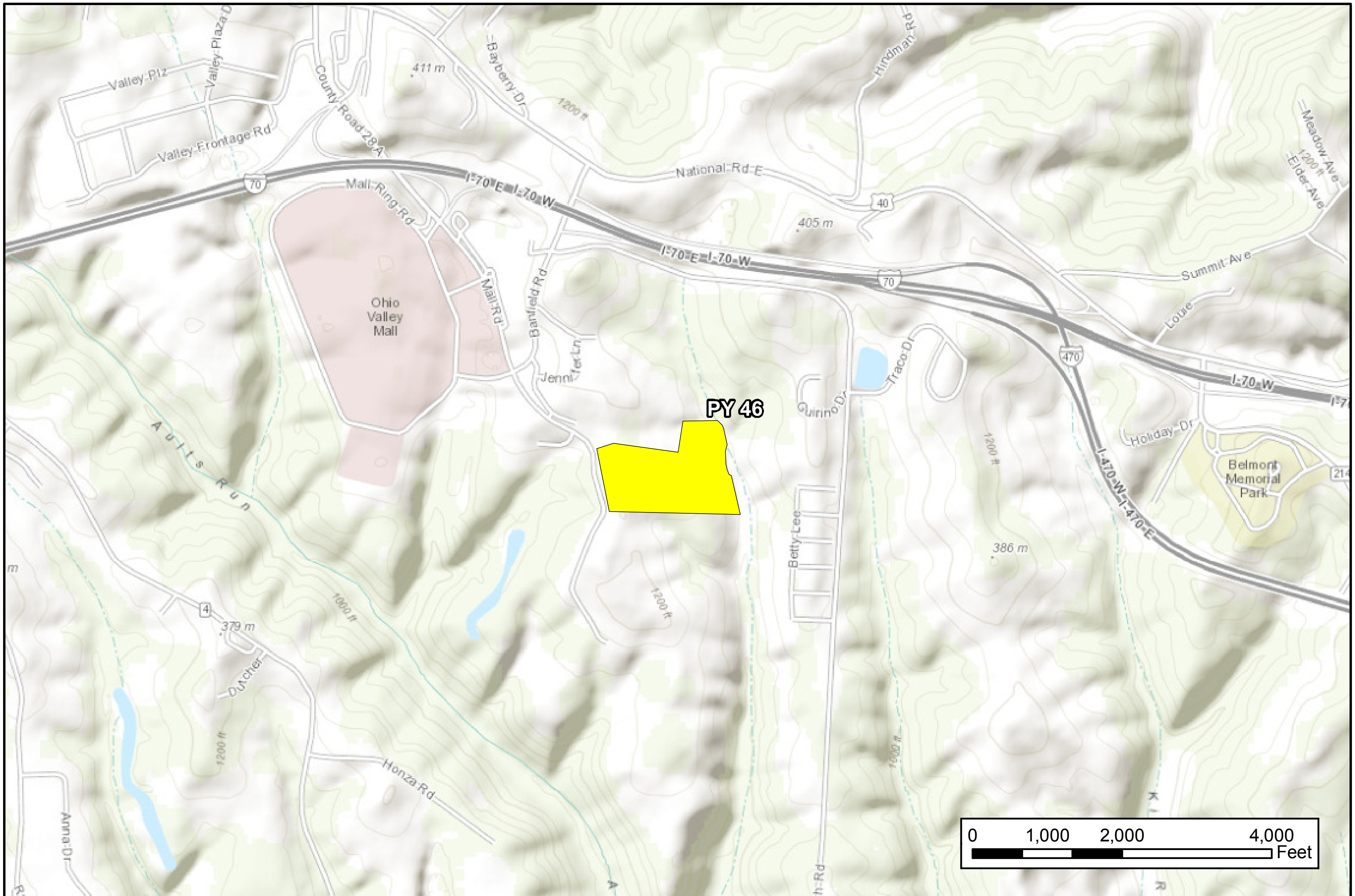
LEX	Access Road
LEX1	Suction Line
R-801 Loop	Permanent Site Facility
R-801 Loop	Temporary Workspace
R-501 Abandonment	Pipe Yards
Main line Valve	Milepost

Appendix B-68
Leach XPress
Project Overview



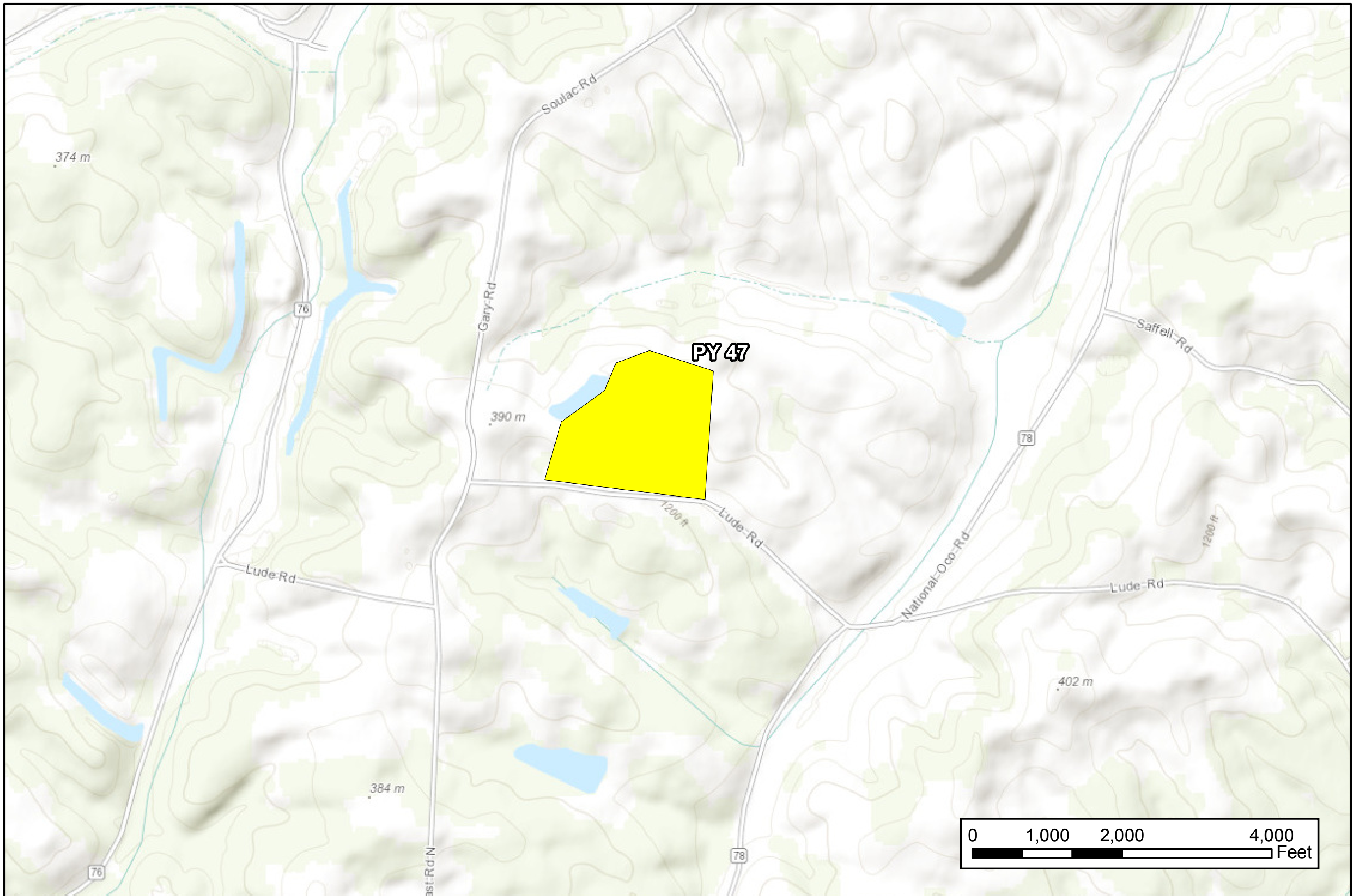
LEX		Access Road	
LEX1		Suction Line	
R-801 Loop		Permanent Site Facility	
R-801 Loop		Temporary Workspace	
R-501 Abandonment		Pipe Yards	
Main line Valve		Milepost	

Appendix B-69
Leach XPress
Project Overview



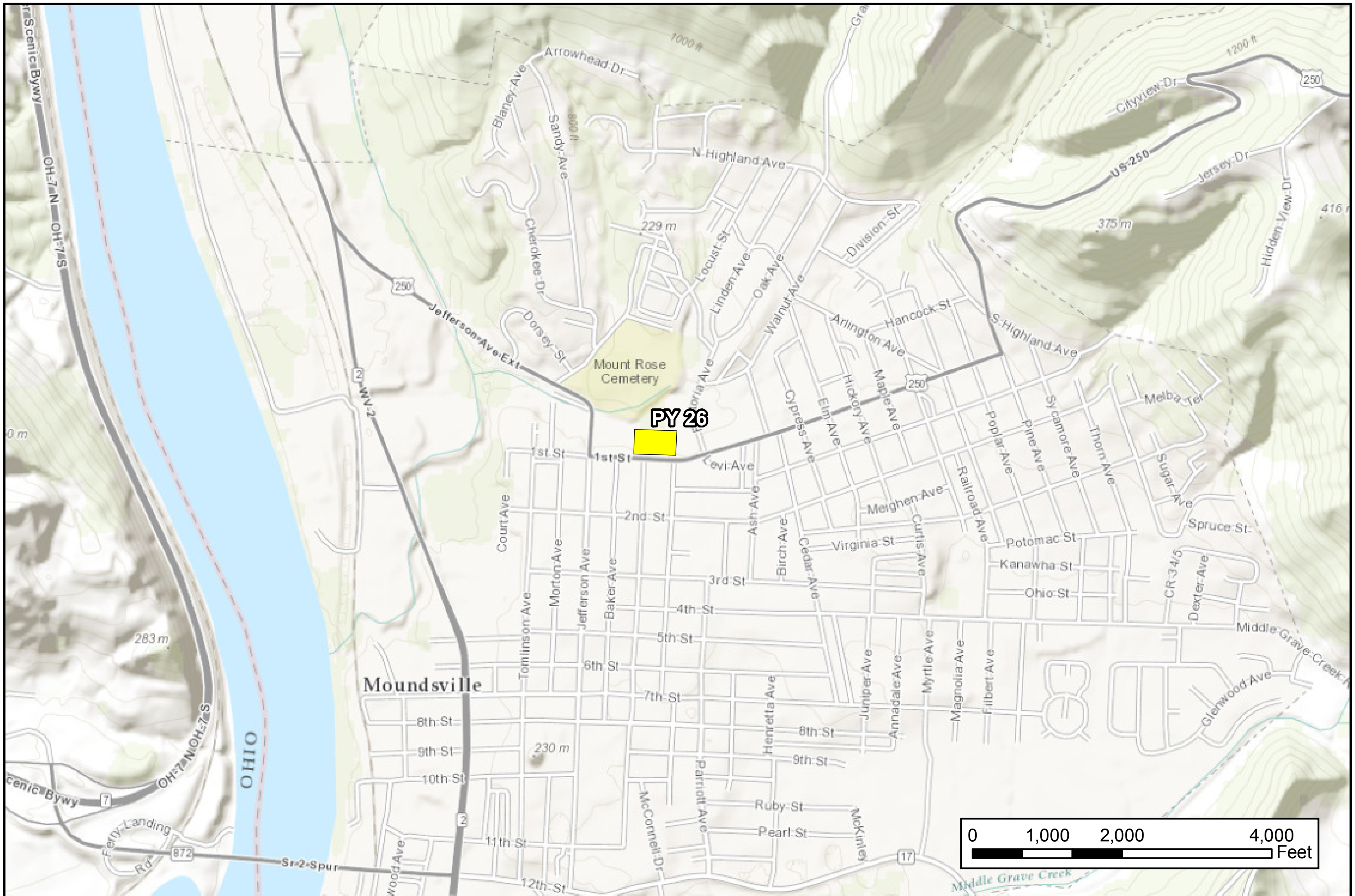
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-70
Leach XPress
Project Overview



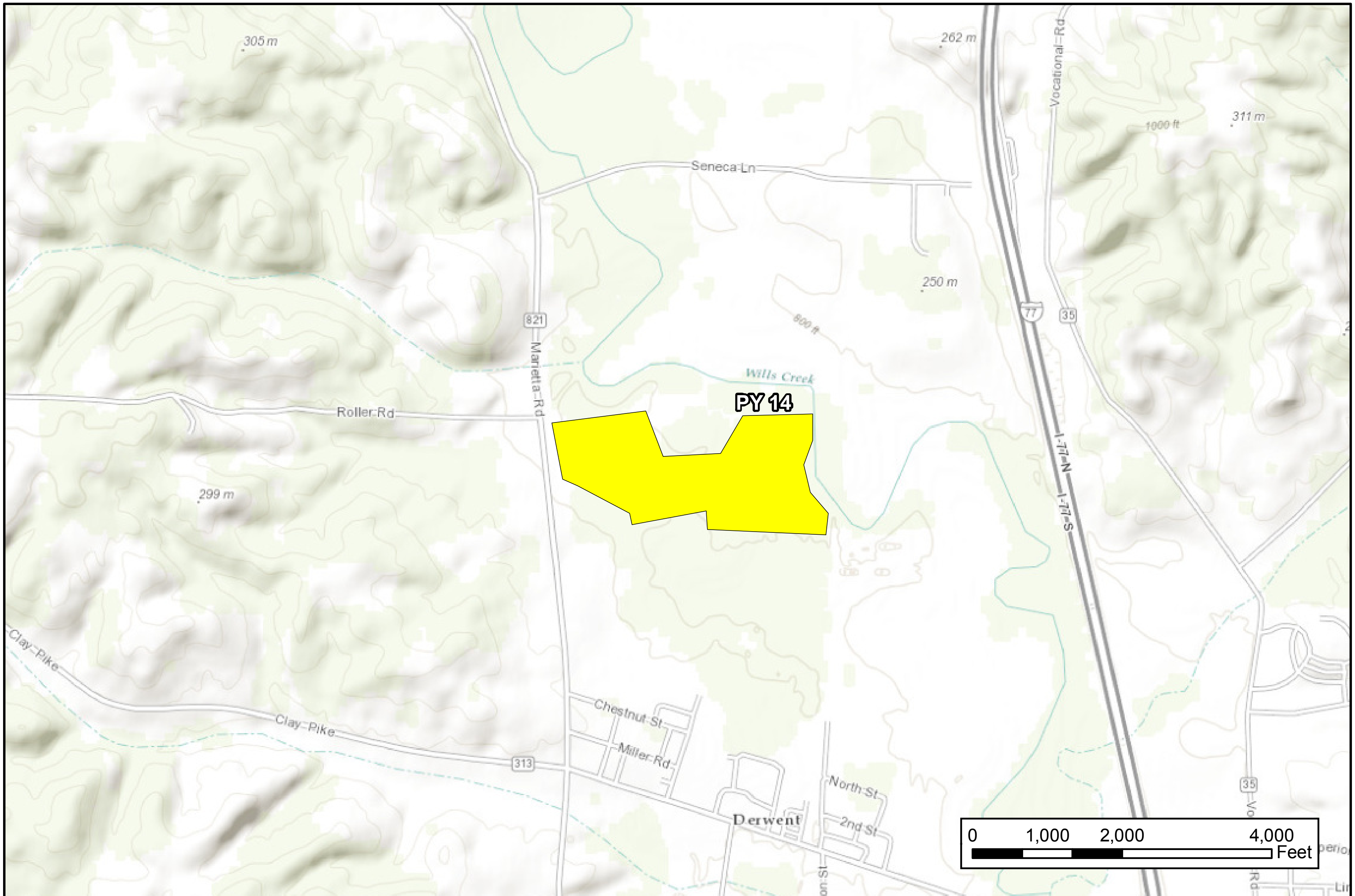
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-71
Leach XPress
Project Overview



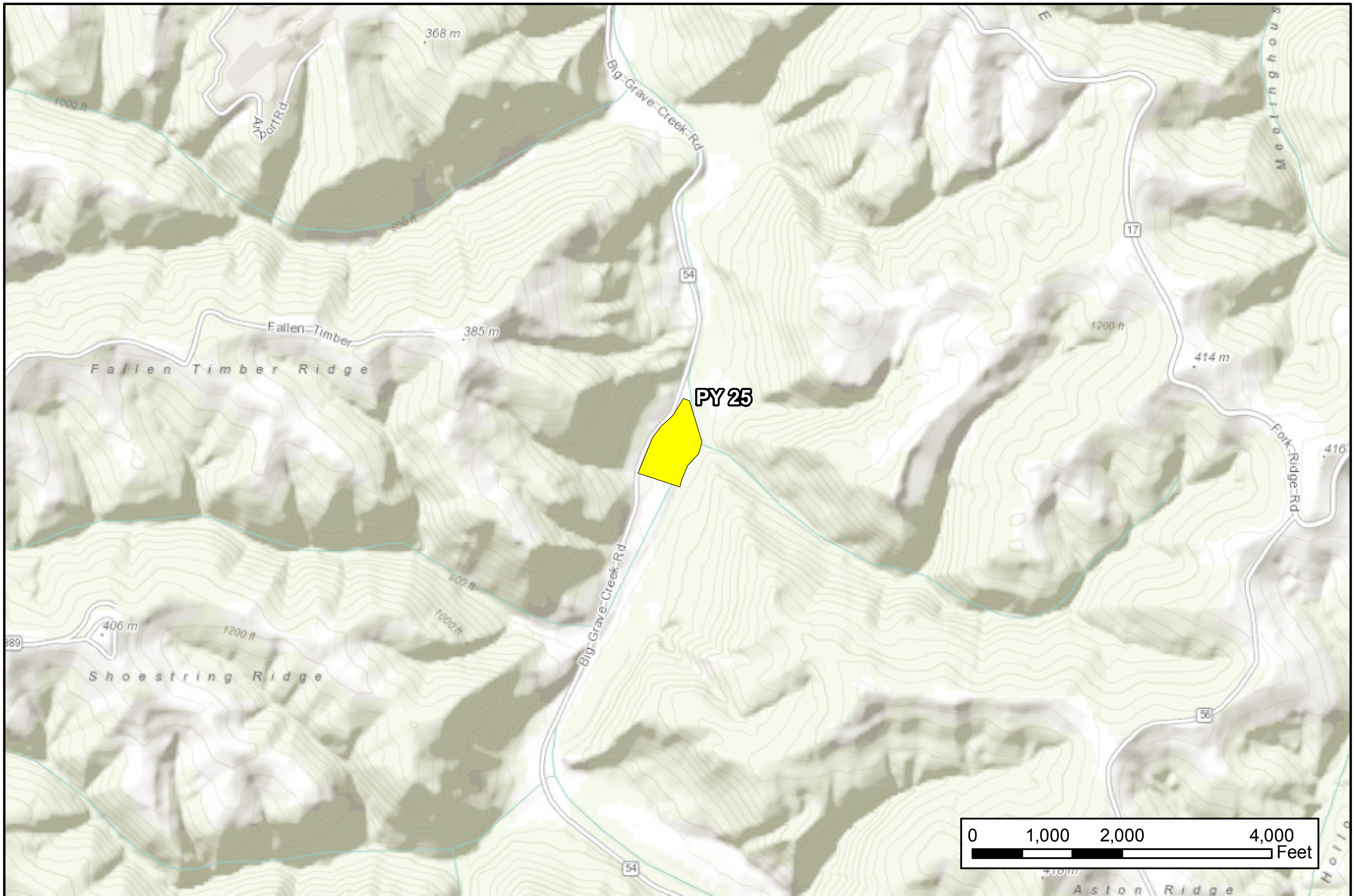
LEX	Access Road
LEX1	Suction Line
R-801 Loop	Permanent Site Facility
R-801 Loop	Temporary Workspace
R-501 Abandonment	Pipe Yards
Main line Valve	Milepost

Appendix B-72
Leach XPress
Project Overview



	LEX		Access Road
	LEX1		Suction Line
	R-801 Loop		Permanent Site Facility
	R-801 Loop		Temporary Workspace
	R-501 Abandonment		Pipe Yards
	Main line Valve	◊	Milepost

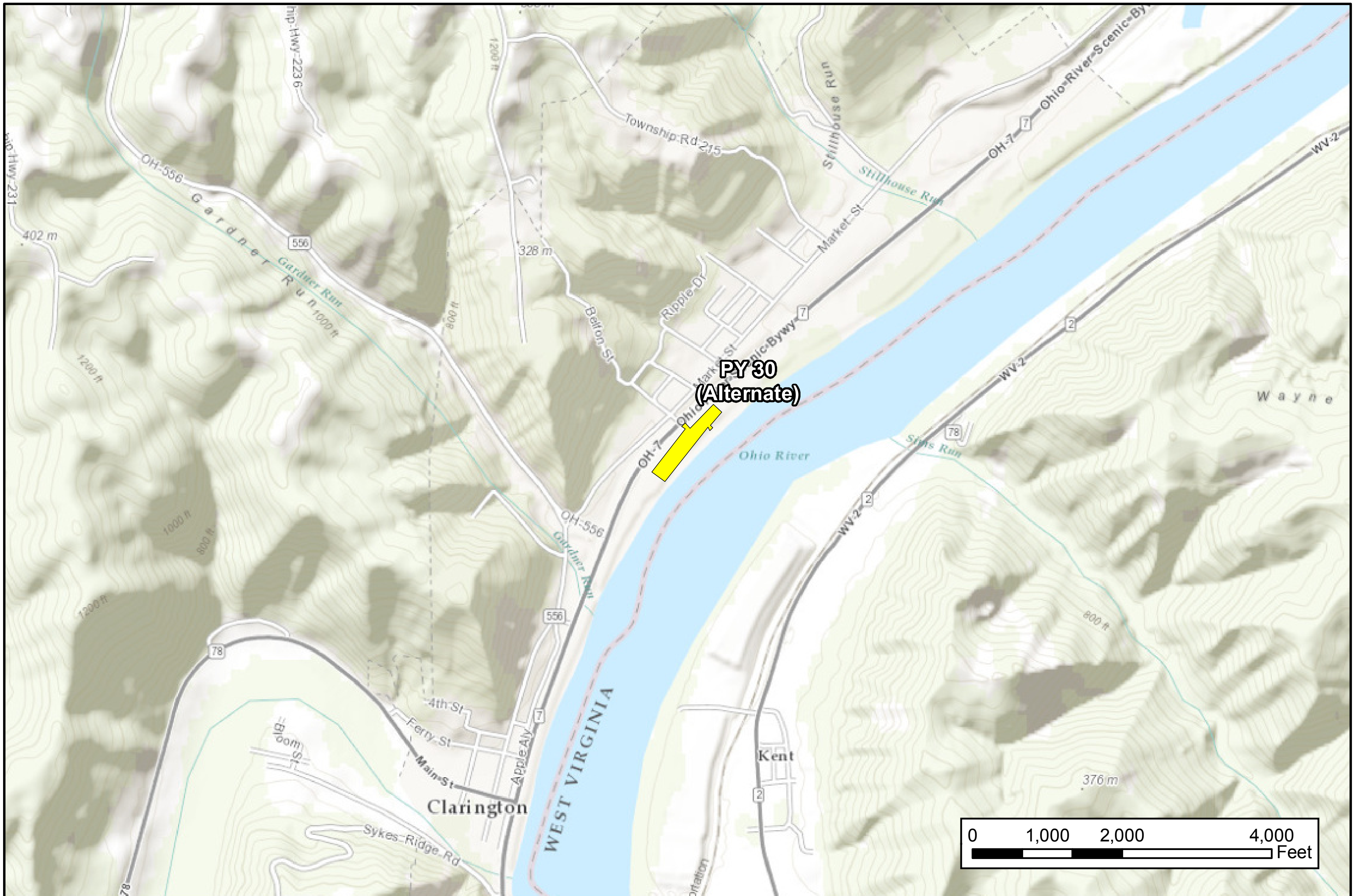
Appendix B-73
Leach XPress
Project Overview



LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

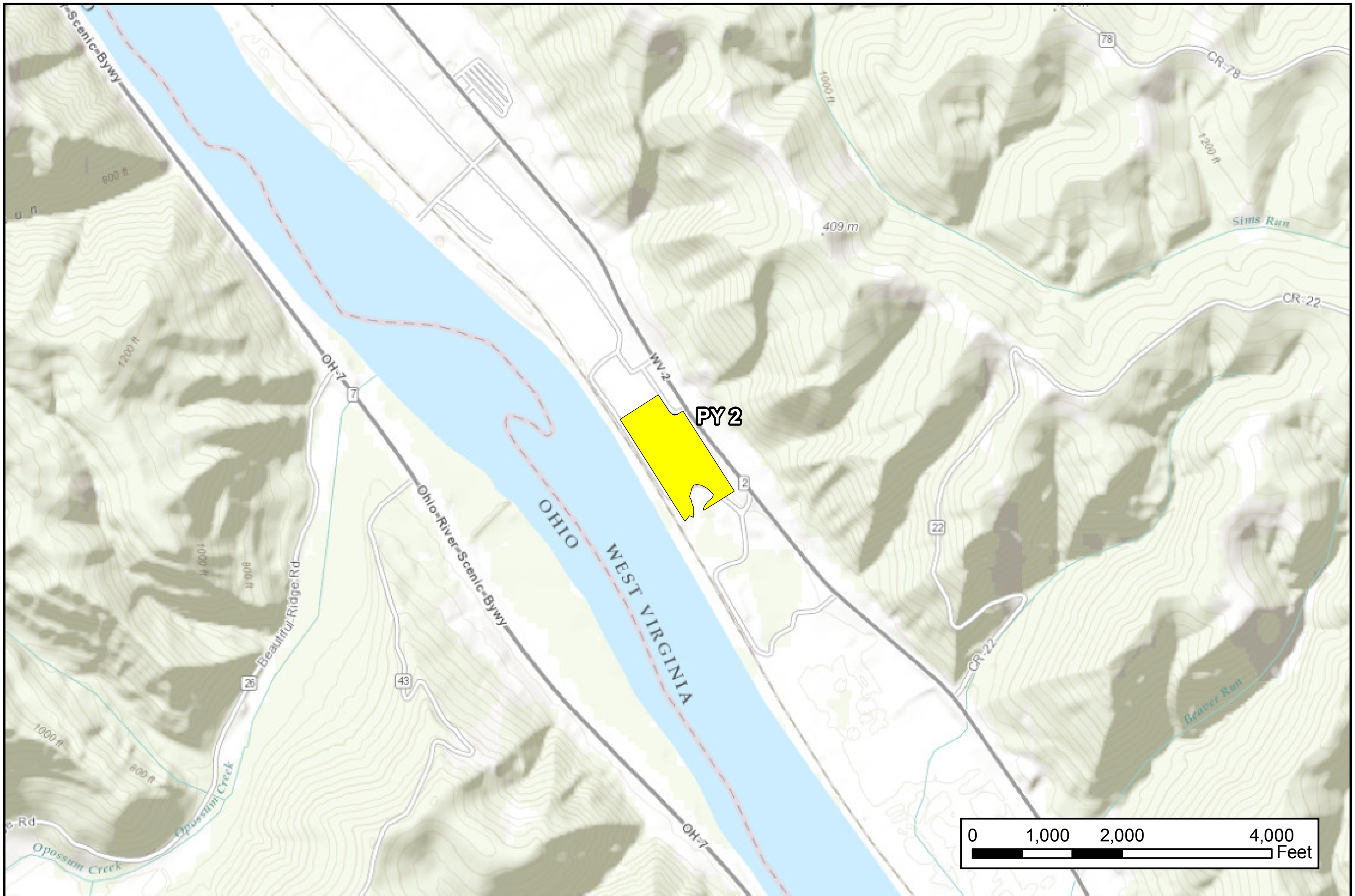
N

Appendix B-74
Leach XPress
Project Overview



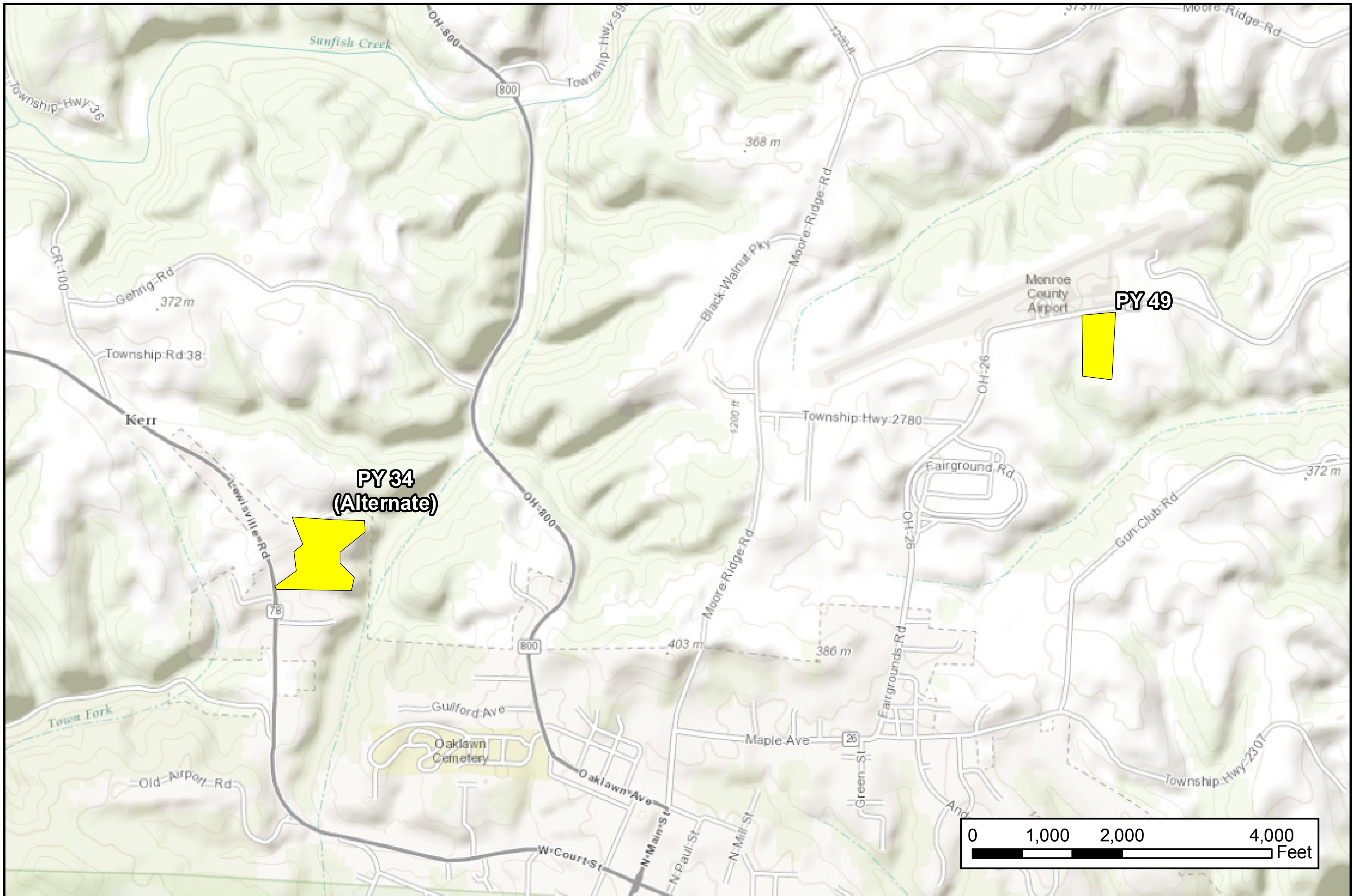
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-75
Leach XPress
Project Overview



- LEX
- LEX1
- R-801 Loop
- R-801 Loop
- R-501 Abandonment
- Main line Valve
- Access Road
- Suction Line
- Permanent Site Facility
- Temporary Workspace
- Pipe Yards
- Milepost

Appendix B-76
Leach XPress
Project Overview



LEX

LEX1

R-801 Loop

R-801 Loop

R-501 Abandonment

Main line Valve

Access Road

Suction Line

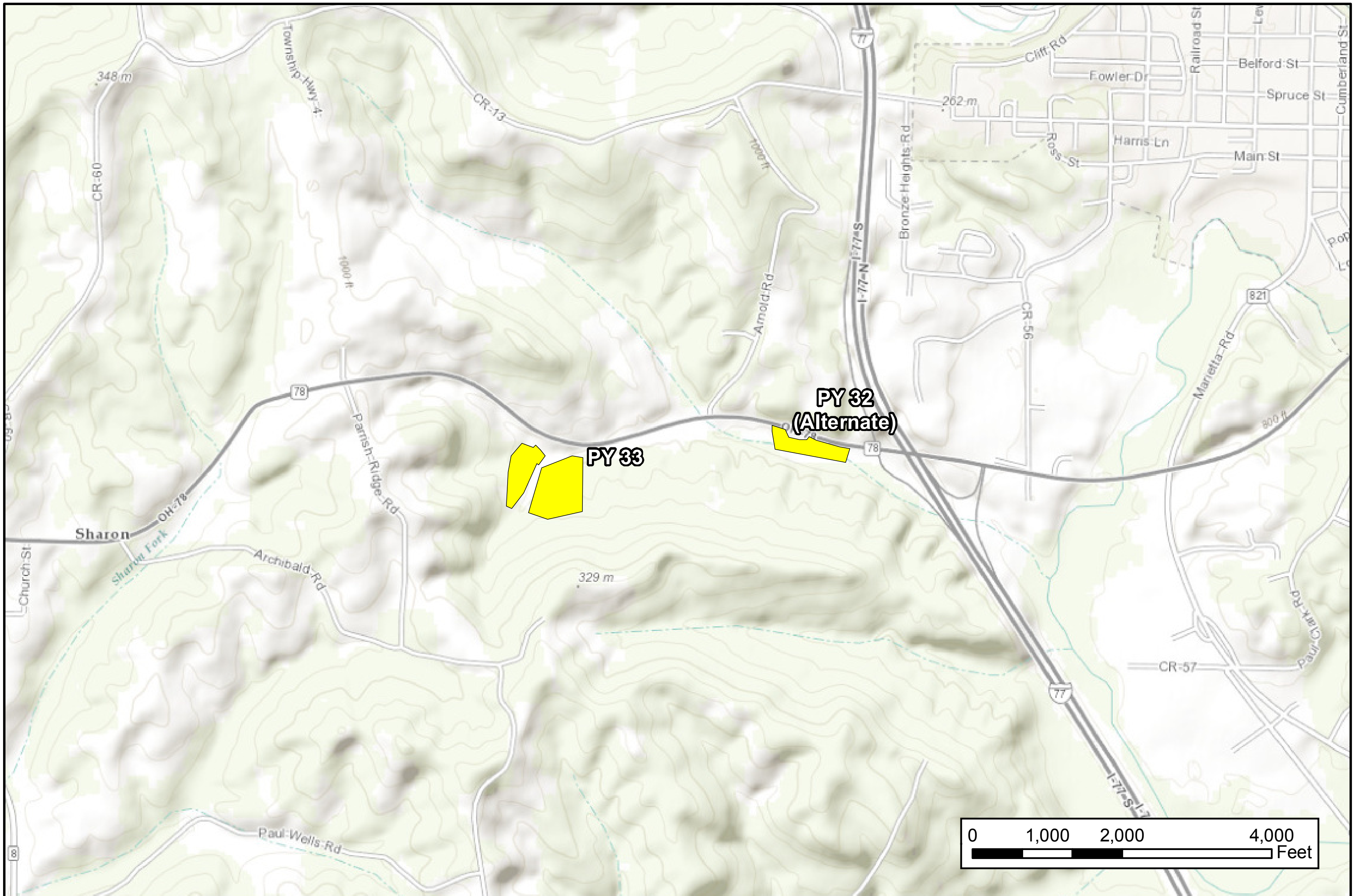
Permanent Site Facility

Temporary Workspace

Pipe Yards

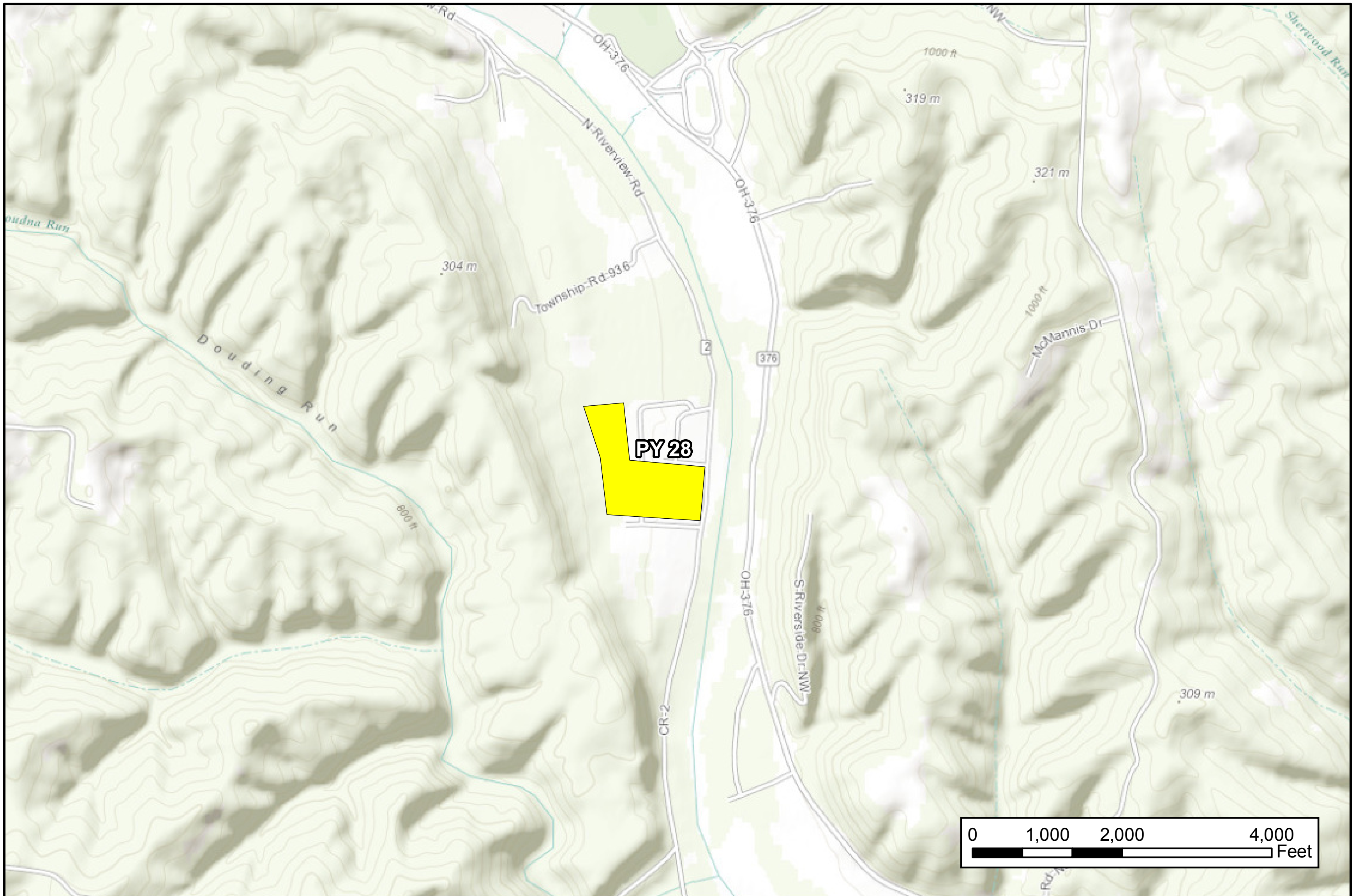
Milepost

Appendix B-77
Leach XPress
Project Overview



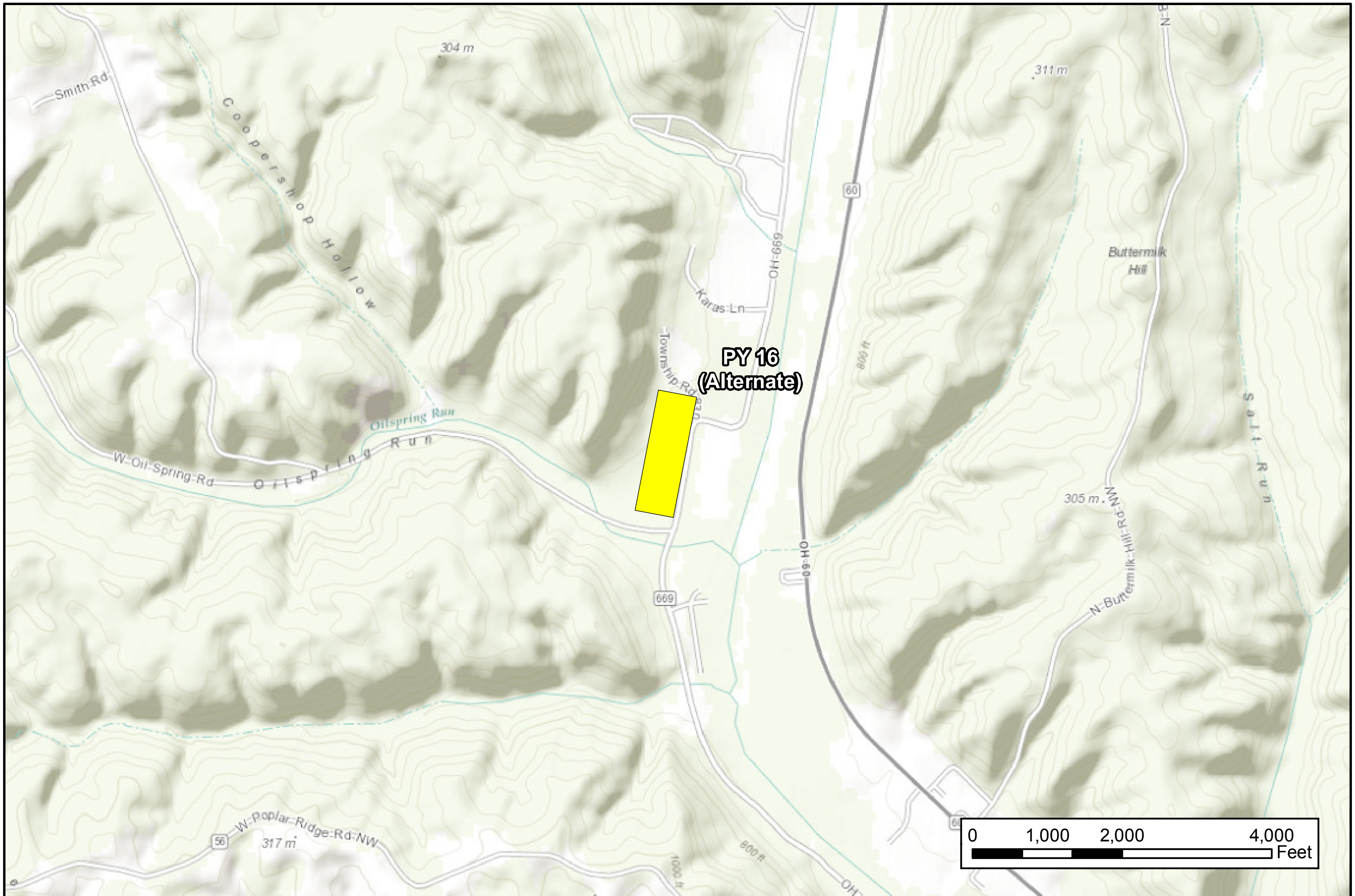
- LEX
- LEX1
- R-801 Loop
- R-801 Loop
- R-501 Abandonment
- Main line Valve
- Access Road
- Suction Line
- Permanent Site Facility
- Temporary Workspace
- Pipe Yards
- Milepost

Appendix B-78
Leach XPress
Project Overview



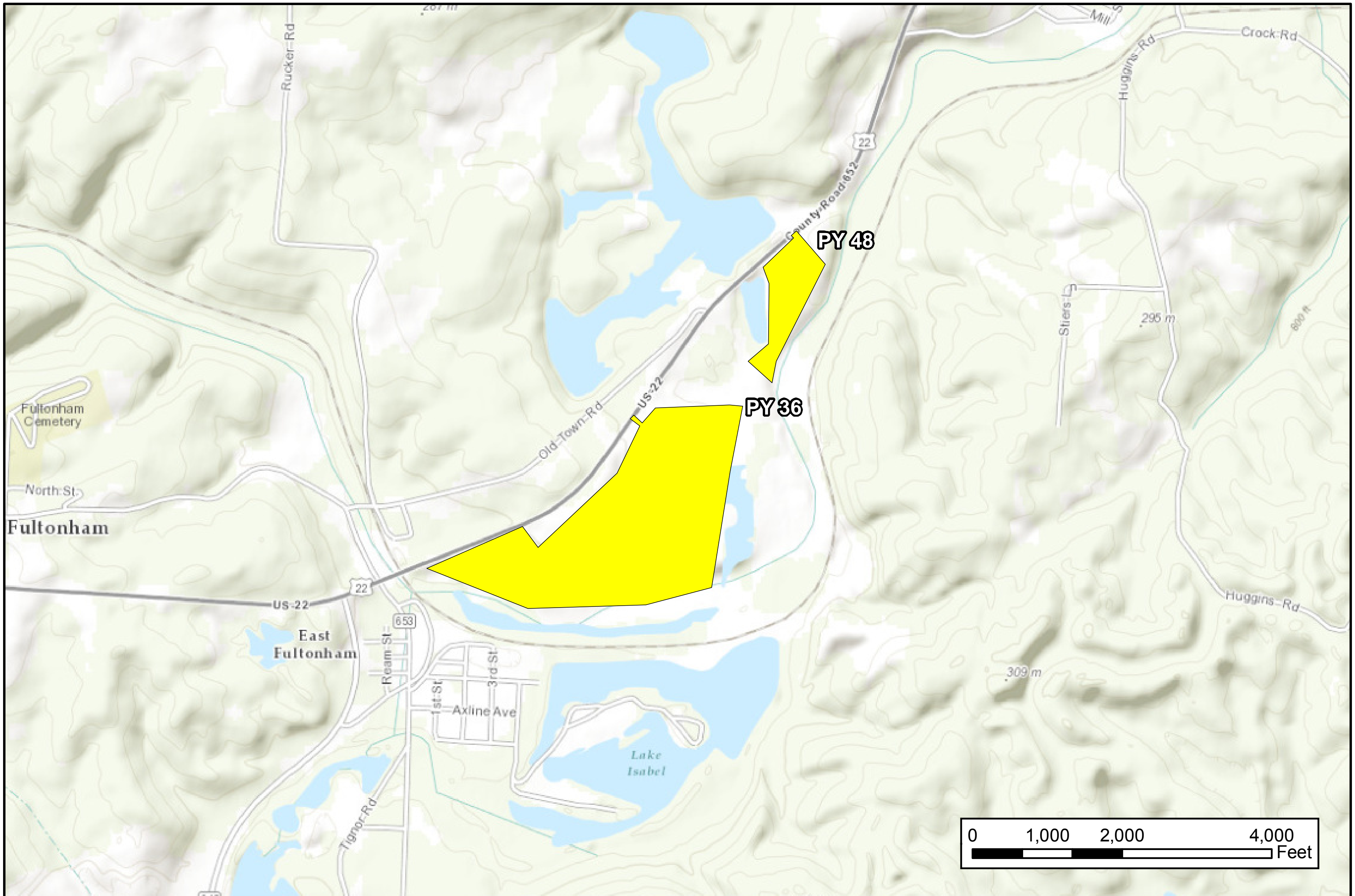
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-79
Leach XPress
Project Overview



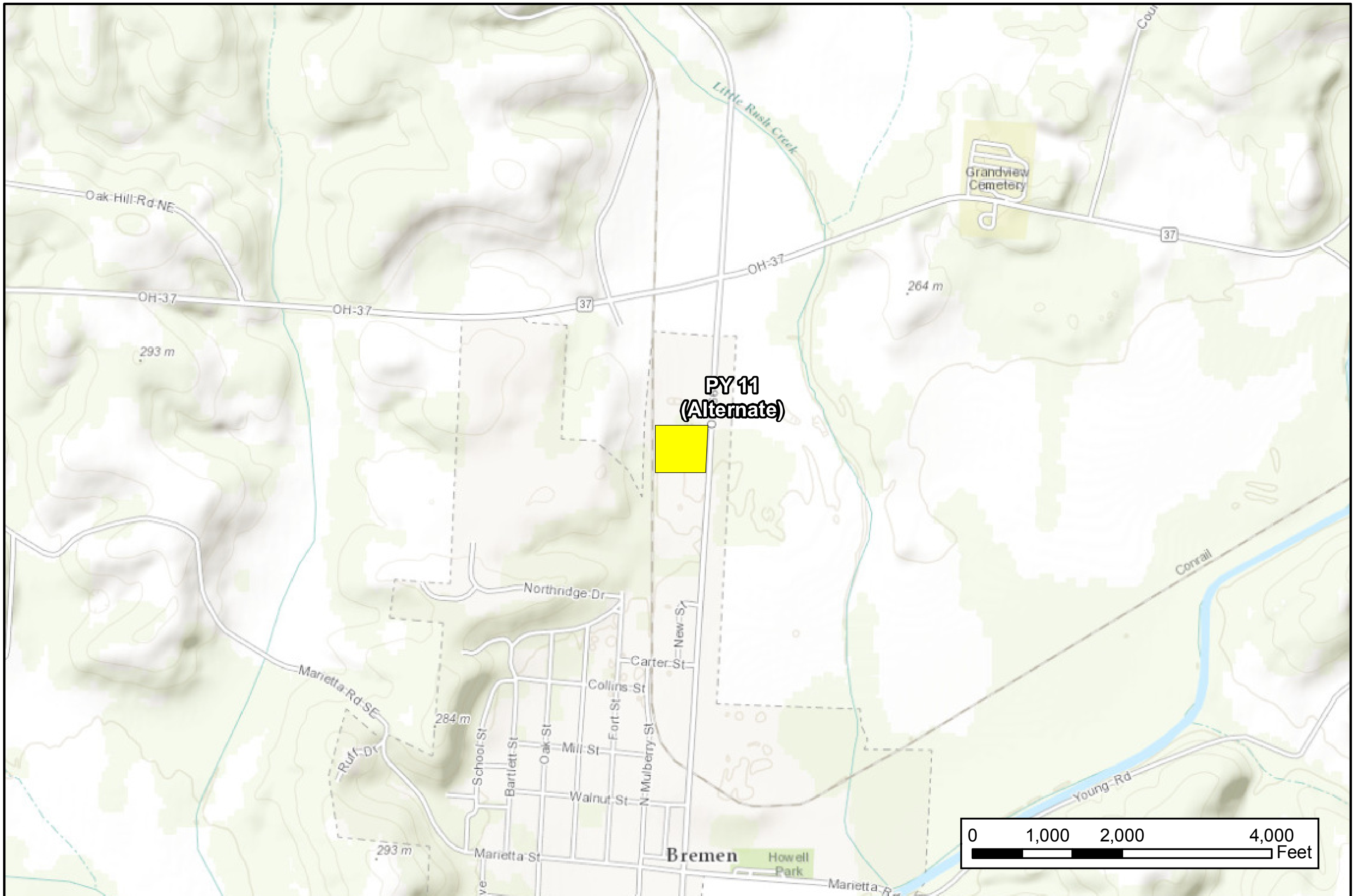
LEX	Access Road
LEX1	Suction Line
R-801 Loop	Permanent Site Facility
R-801 Loop	Temporary Workspace
R-501 Abandonment	Pipe Yards
Main line Valve	Milepost

Appendix B-80
Leach XPress
Project Overview



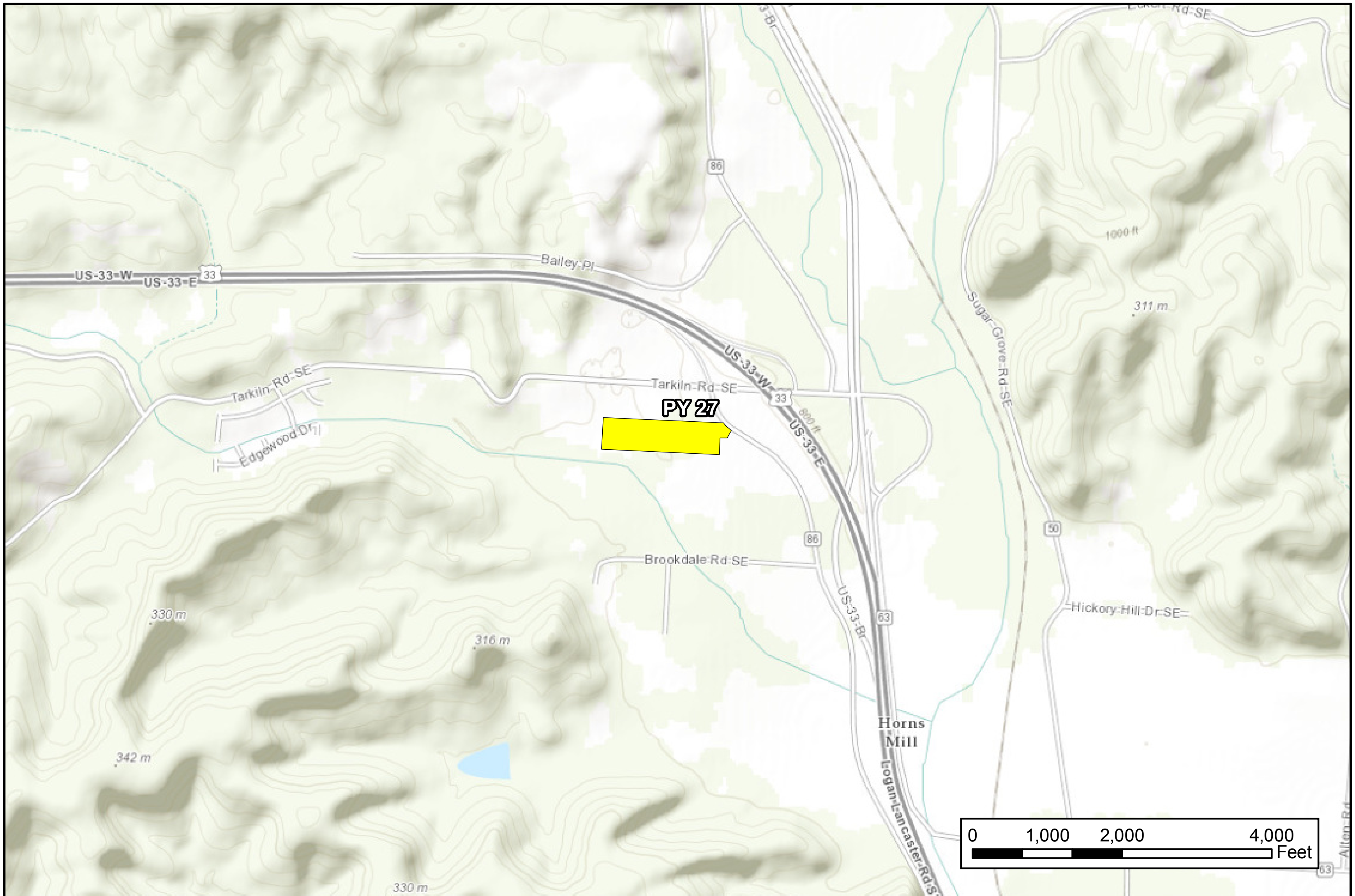
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-81
Leach XPress
Project Overview



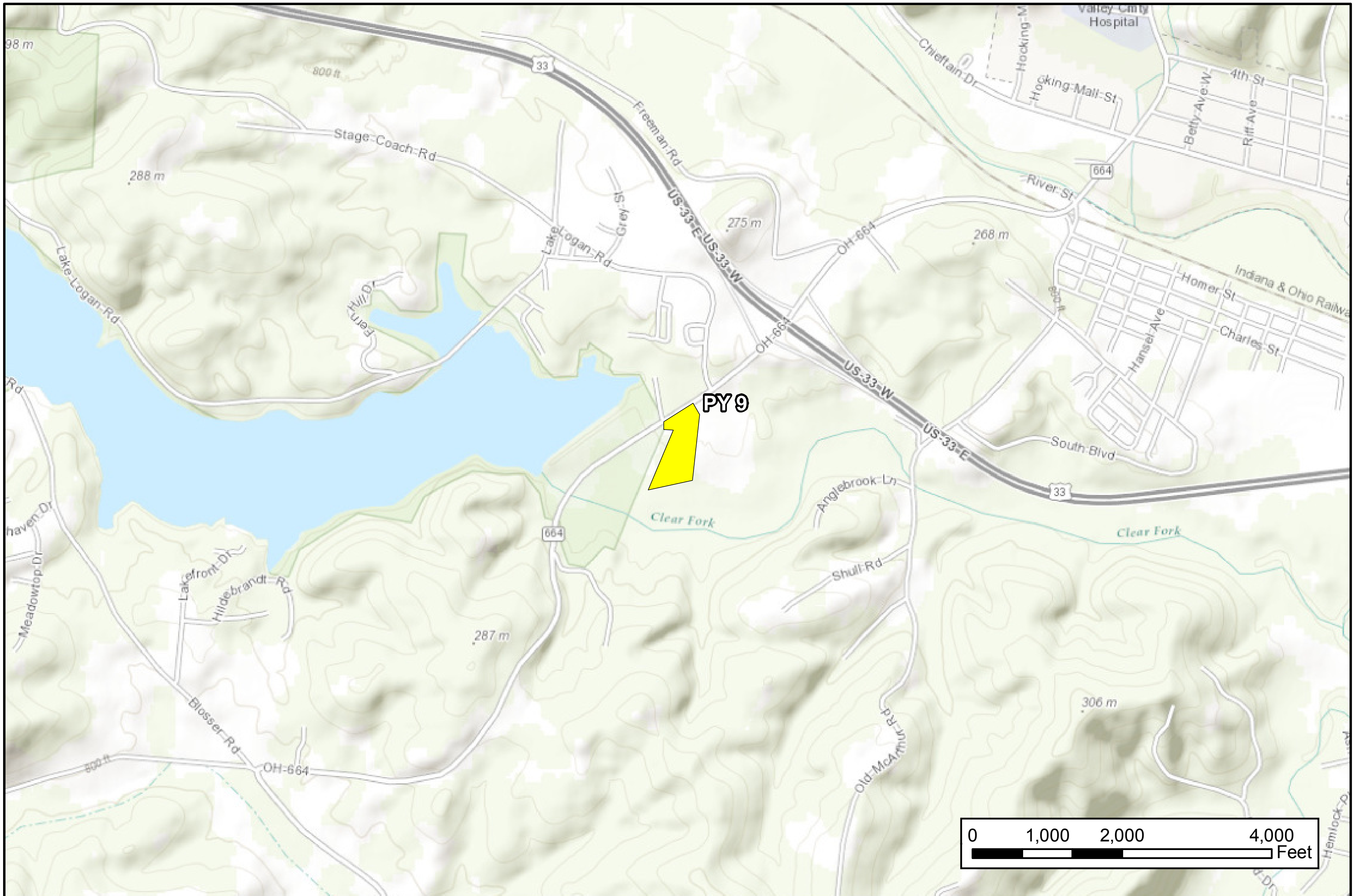
LEX		Access Road	
LEX1		Suction Line	
R-801 Loop		Permanent Site Facility	
R-801 Loop		Temporary Workspace	
R-501 Abandonment		Pipe Yards	
Main line Valve		Milepost	

Appendix B-82
Leach XPress
Project Overview



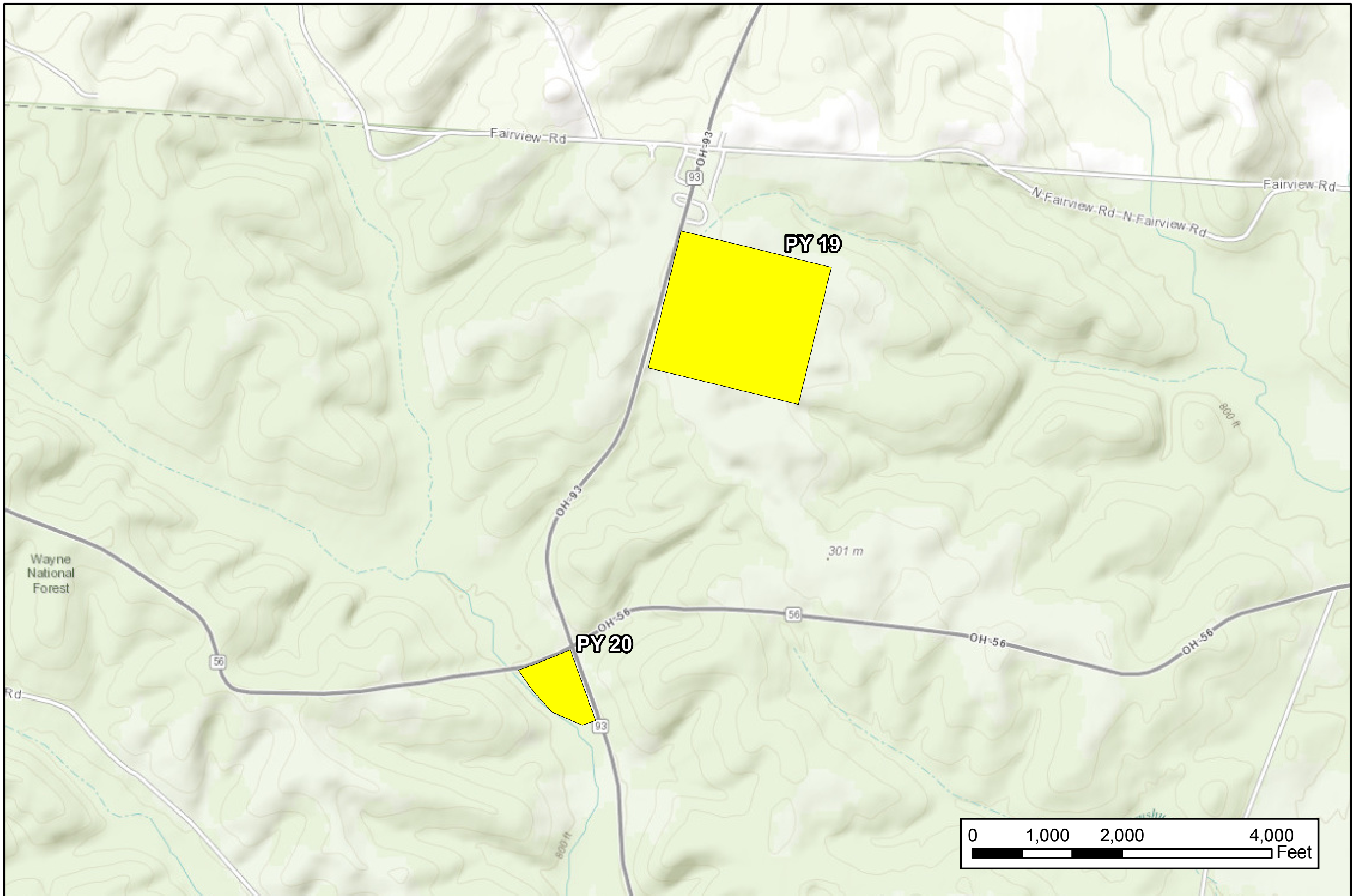
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-83
Leach XPress
Project Overview



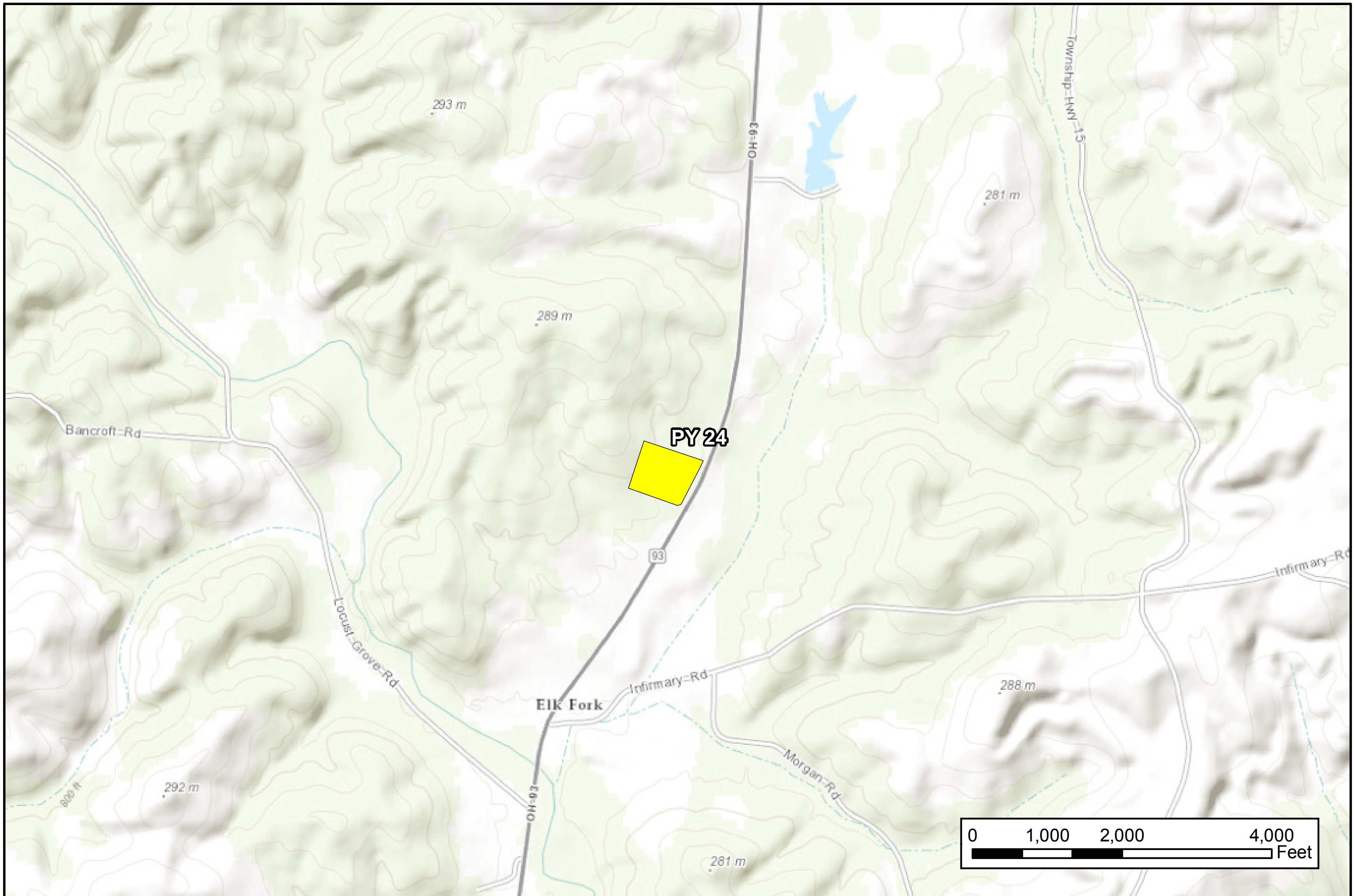
- LEX
- LEX1
- R-801 Loop
- R-801 Loop
- R-501 Abandonment
- Main line Valve
- Access Road
- Suction Line
- Permanent Site Facility
- Temporary Workspace
- Pipe Yards
- Milepost

Appendix B-84
Leach XPress
Project Overview



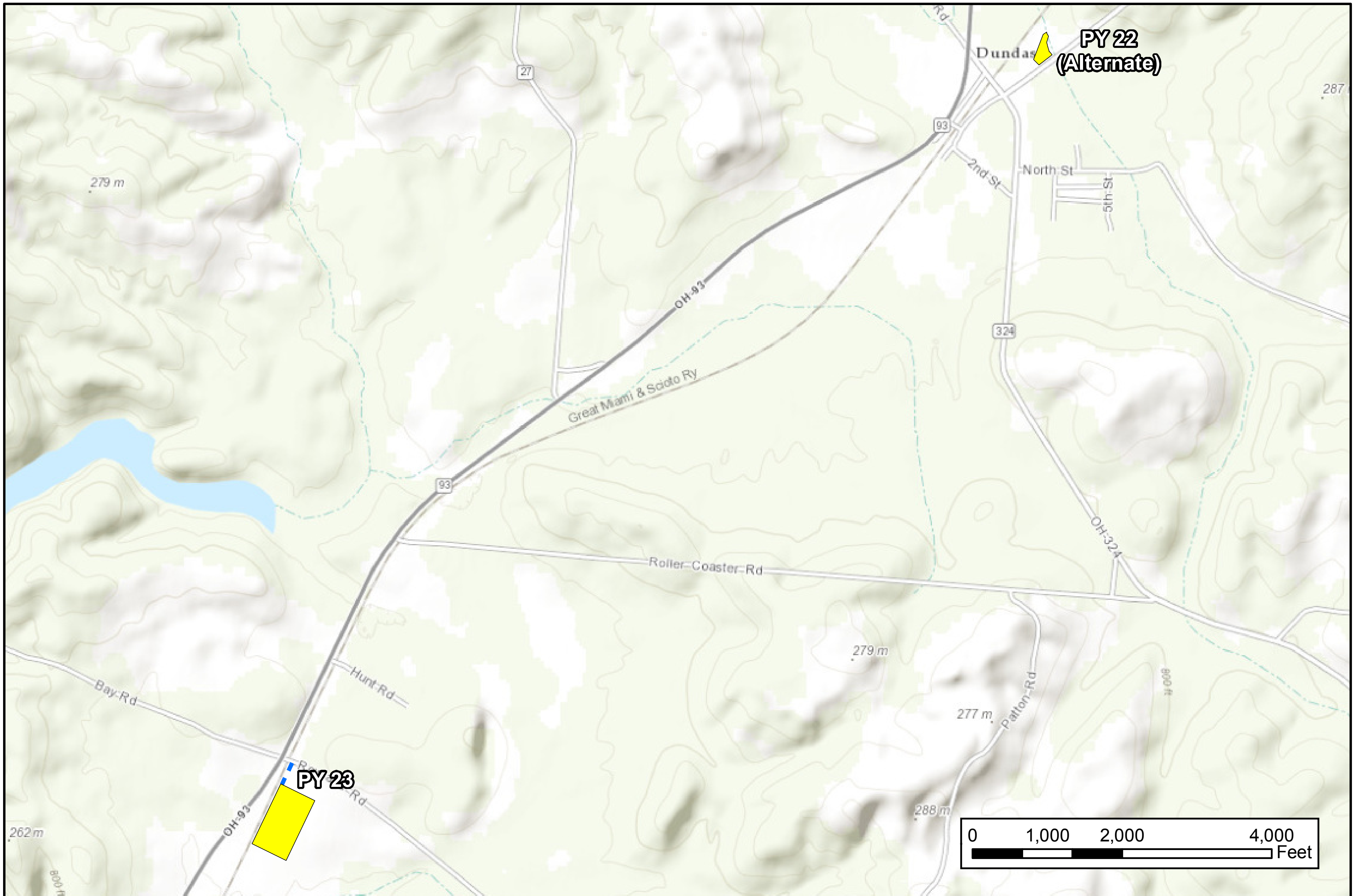
LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

Appendix B-85
Leach XPress
Project Overview



LEX
LEX1
R-801 Loop
R-801 Loop
R-501 Abandonment
Main line Valve
Access Road
Suction Line
Permanent Site Facility
Temporary Workspace
Pipe Yards
Milepost

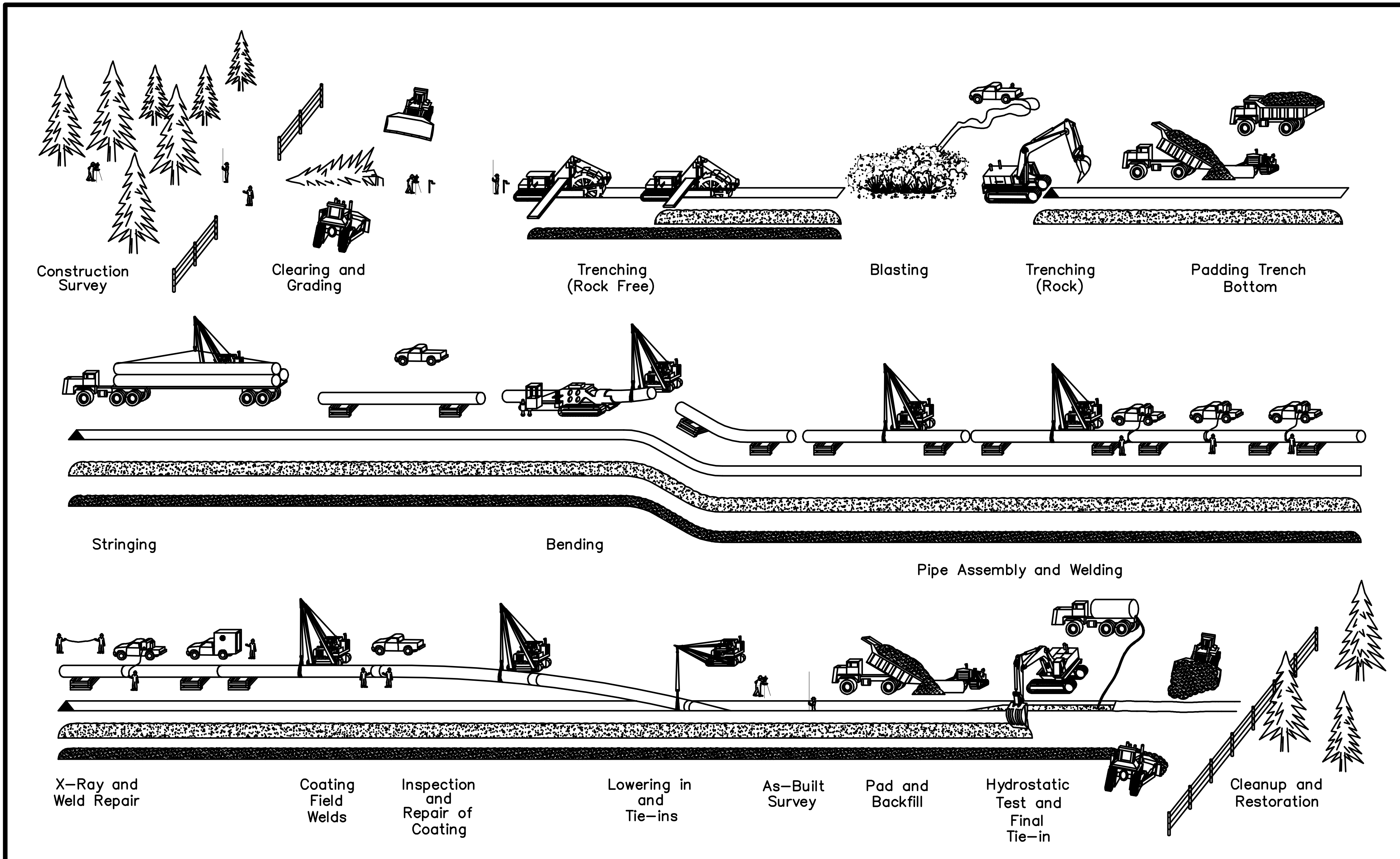
Appendix B-86
Leach XPress
Project Overview



- LEX
- LEX1
- R-801 Loop
- R-801 Loop
- R-501 Abandonment
- Main line Valve
- Access Road
- Suction Line
- Permanent Site Facility
- Temporary Workspace
- Pipe Yards
- Milepost

Appendix B-87
Leach XPress
Project Overview

APPENDIX C
Typical Construction Standards



Appendix C-1

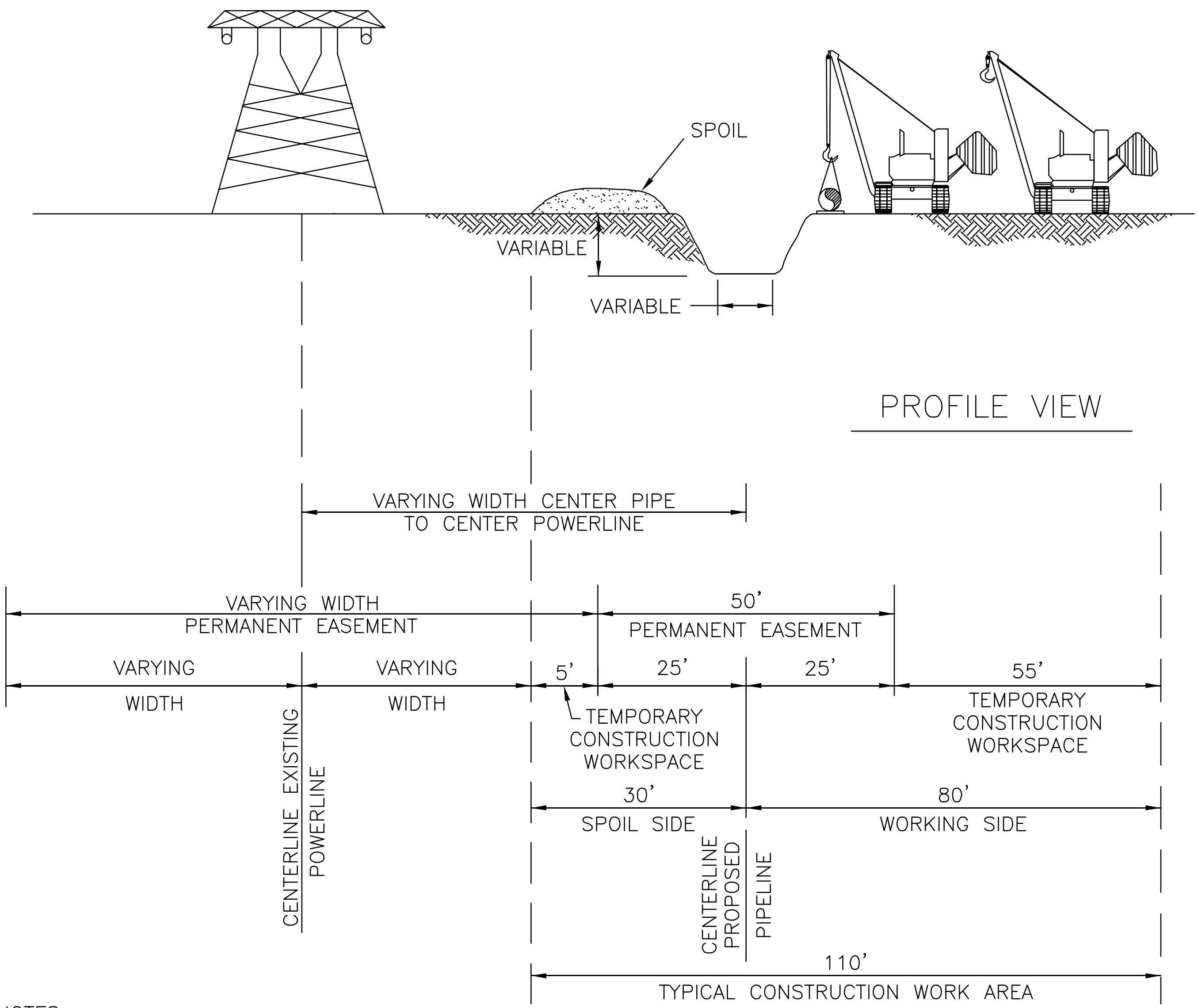
LEACH XPRESS

TYPICAL

PIPELINE CONSTRUCTION SEQUENCE

DRAWN BY	DATE	DWG. NO. FIGURE 1-1
CHECKED BY	SCALE N.T.S.	
APPROVED BY	SHEET 1 OF 1	

TYPICAL PARALLELING CONFIGURATION WITH POWERLINE



PLAN VIEW

NOTES:

1. USE FOR 14-INCH OR GREATER DIAMETER PIPELINE.
2. THE DIMENSIONS SHOWN ON THIS FIGURE ARE TYPICAL.
3. VARIATIONS FOR STAGING AREAS MAY BE NECESSARY DUE TO SITE-SPECIFIC TERRAIN FEAUTURES; HOWEVER, UNLESS OTHERWISE INDICATED IN COLUMBIA'S ENVIRONMENTAL MANAGEMENT & CONSTRUCTION PLANS, THE MAXIMUM WIDTH OF CONSTRUCTION WORK AREA WILL BE 110 FEET.

PRELIMINARY

Appendix C-2

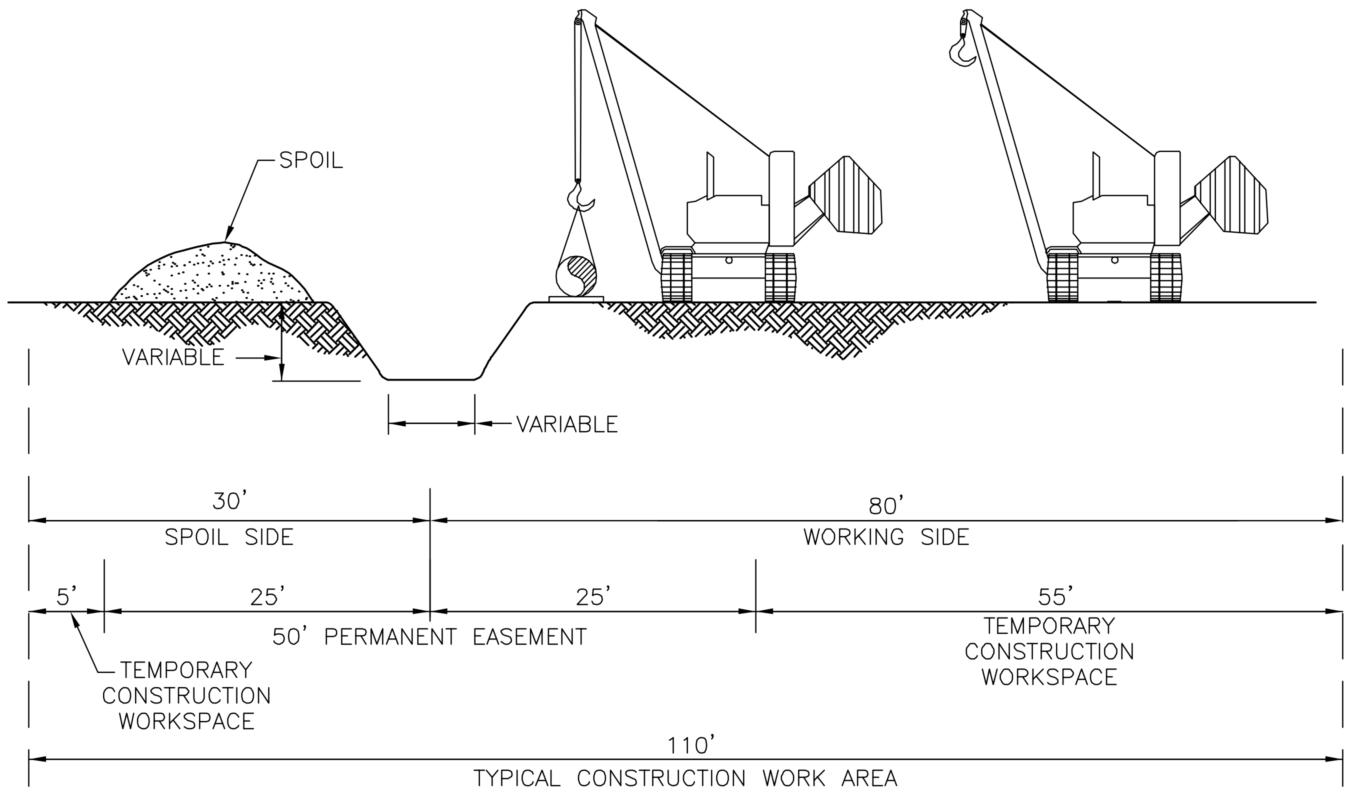
TYPICAL PARALLELING CONFIGURATION WITH POWERLINE

LEACH XPRESS PROJECT

File No.:

DRAWN BY	DATE	DWG. NO.
CHECKED BY	SCALE N.T.S.	TYPICAL 1
APPROVED BY	SHEET 1 of 1	

TYPICAL GREENFIELD WORKSPACE



PLAN/PROFILE VIEW

NOTES:

1. USE FOR 14–INCH OR GREATER DIAMETER PIPELINE.
2. THE DIMENSIONS SHOWN ON THIS FIGURE ARE TYPICAL.
3. VARIATIONS FOR STAGING AREAS MAY BE NECESSARY DUE TO SITE–SPECIFIC TERRAIN FEAUTURES; HOWEVER, UNLESS OTHERWISE INDICATED IN COLUMBIA'S ENVIRONMENTAL MANAGEMENT & CONSTRUCTION PLANS, THE MAXIMUM WIDTH OF CONSTRUCTION WORK AREA WILL BE 110 FEET.

PRELIMINARY

Appendix C-3

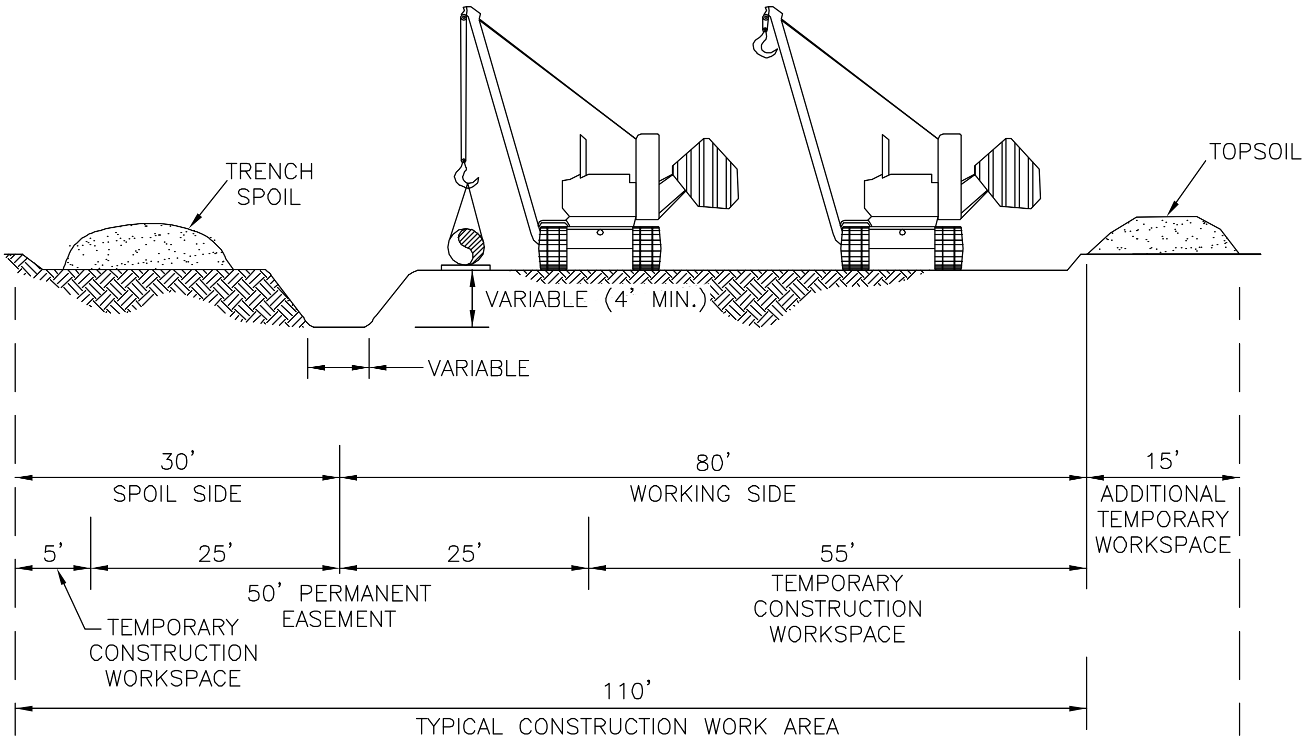
TYPICAL GREENFIELD WORKSPACE

LEACH XPRESS PROJECT

File No.:

DRAWN BY	DATE	DWG. NO.
CHECKED BY	SCALE N.T.S.	TYPICAL 2
APPROVED BY	SHEET 1 of 1	

TYPICAL AGRICULTURAL WORKSPACE



PLAN/PROFILE VIEW

NOTES:

1. USE FOR 14–INCH OR GREATER DIAMETER PIPELINE.
2. THE DIMENSIONS SHOWN ON THIS FIGURE ARE TYPICAL.
3. VARIATIONS FOR STAGING AREAS MAY BE NECESSARY DUE TO SITE–SPECIFIC TERRAIN FEAUTURES; HOWEVER, UNLESS OTHERWISE INDICATED IN COLUMBIA'S ENVIRONMENTAL MANAGEMENT & CONSTRUCTION PLANS, THE MAXIMUM WIDTH OF CONSTRUCTION WORK AREA WILL BE 110 FEET.
4. OTHER CONFIGURATIONS OF TOPSOIL AND SUBSOIL ARE ACCEPTABLE PROVIDED THEY ARE KEPT SEPARATE.
5. UP TO 12 INCHES OF TOPSOIL REMOVED.
6. TOPSOIL AND SUBSOIL PILES WILL BE ADEQUATELY PROTECTED FROM EROSION AND SEDIMENTATION BY USE OF SEDIMENT FILTER DEVICES OR MULCH.

PRELIMINARY

Appendix C-4

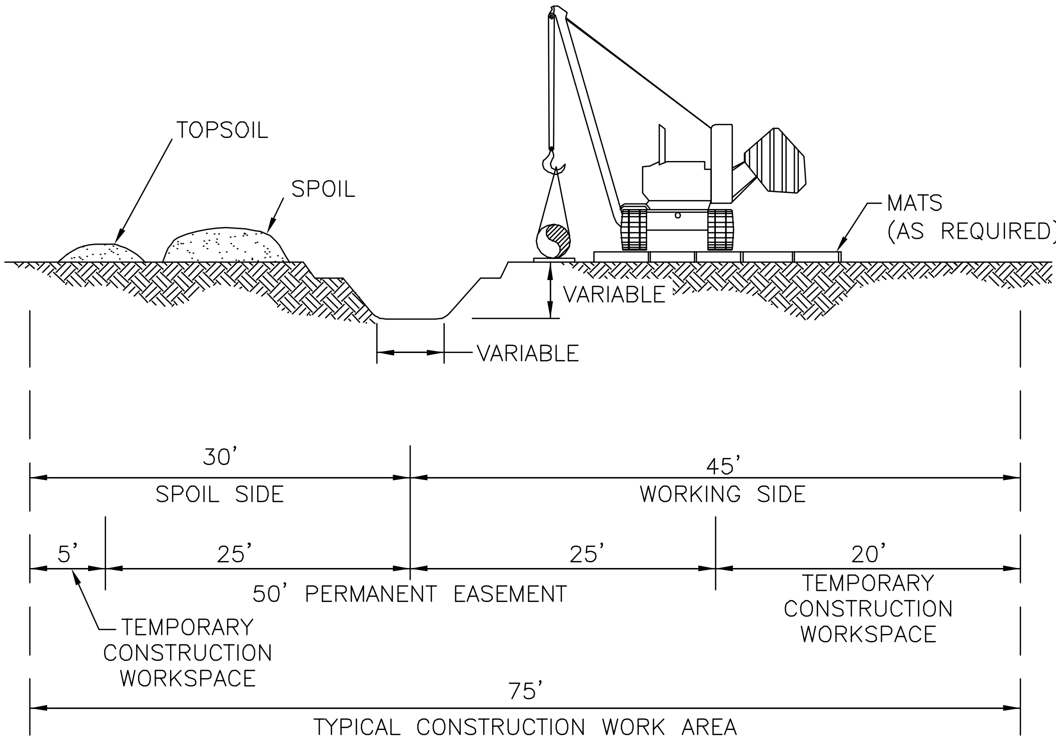
TYPICAL AGRICULTURAL WORKSPACE

LEACH XPRESS PROJECT

File No.:

DRAWN BY		DATE		DWG. NO.
CHECKED BY		SCALE	N.T.S.	TYPICAL 3
APPROVED BY		SHEET	1 of 1	

TYPICAL WETLAND CROSSING



PLAN/PROFILE VIEW

NOTES:

1. IN WETLAND AREAS WHICH CONTAIN NO STANDING WATER OR IF SOILS ARE SATURATED OR FROZEN, TOPSOIL (TOP 12 INCHES) AND SUBSOIL WILL BE STOCKPILED SEPARATELY WITHIN THE WETLAND CONSTRUCTION WORK AREA.
2. WETLANDS WITH STANDING WATER, SATURATED OR FROZEN SOIL, OPERATE EQUIPMENT PER REQUIREMENTS IN SECTION III.B–2. (ECS)
3. A SEDIMENT FILTER DEVICE WILL BE PLACED ACROSS THE WORK AREA AT THE WETLAND'S EDGE, IMMEDIATELY UPSLOPE OF THE WETLAND BOUNDARY.
4. A SEDIMENT FILTER DEVICE WILL BE PLACED AT THE EDGE OF THE WORK AREA AND AROUND SOIL AND SUBSOIL PILES AS NECESSARY.

PRELIMINARY

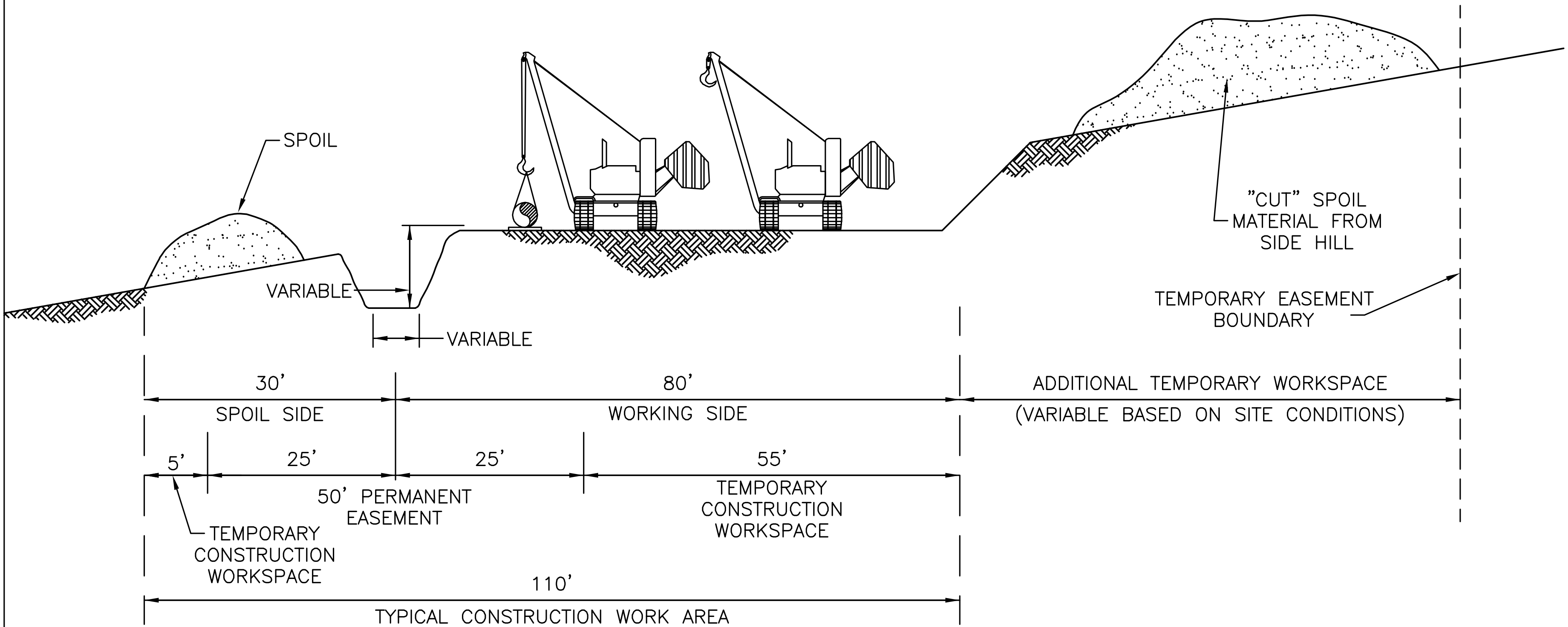
Appendix C-5

TYPICAL WETLAND CROSSING

File No.:

LEACH XPRESS PROPJECT

DRAWN BY	DATE	DWG. NO.
CHECKED BY	SCALE N.T.S.	TYPICAL 4
APPROVED BY	SHEET 1 of 1	



PROFILE

NOTES:

1. USE FOR 14–INCH OR GREATER DIAMETER PIPELINE.
2. THE DIMENSIONS SHOWN ON THIS FIGURE ARE TYPICAL.
3. VARIATIONS FOR STAGING AREAS MAY BE NECESSARY DUE TO SITE–SPECIFIC TERRAIN FEAUTURES; HOWEVER, UNLESS OTHERWISE INDICATED IN COLUMBIA'S ENVIRONMENTAL MANAGEMENT & CONSTRUCTION PLANS, THE MAXIMUM WIDTH OF CONSTRUCTION WORK AREA WILL BE 110 FEET.

PRELIMINARY

Appendix C-6

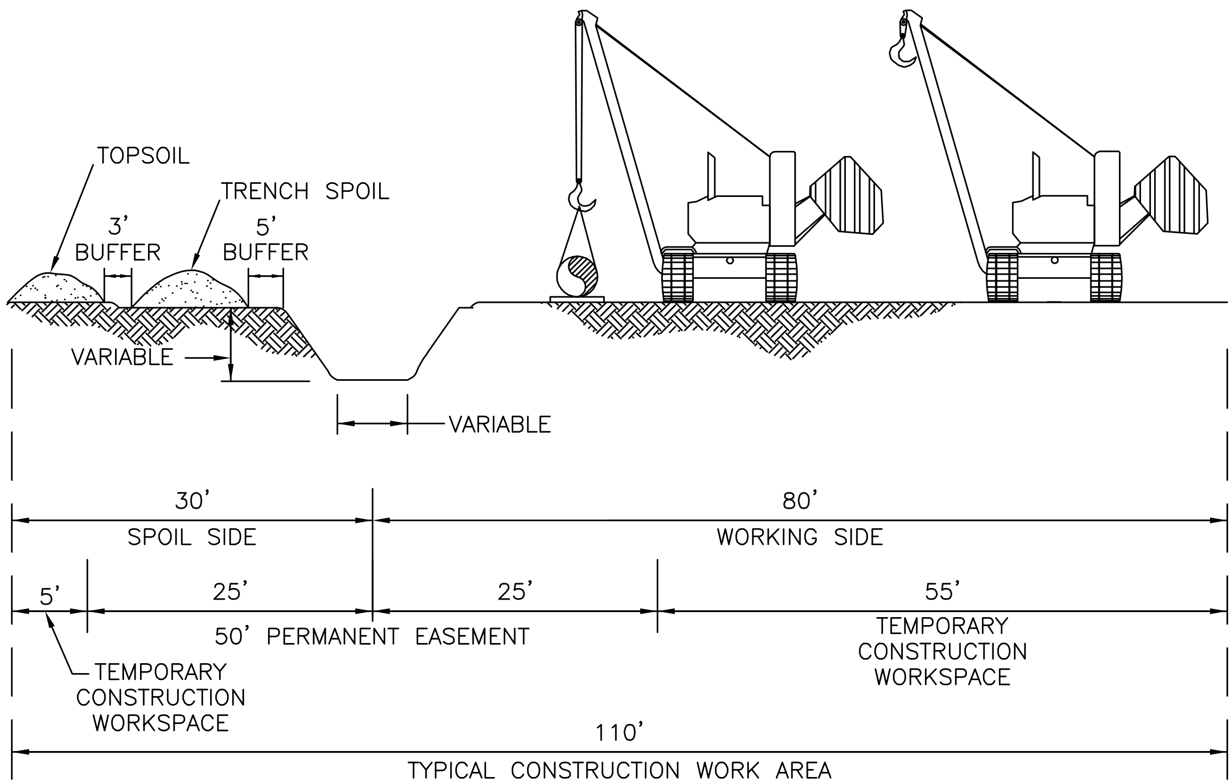
TYPICAL SIDE SLOPE CONSTRUCTION WORKSPACE

LEACH XPRESS PROJECT

File No.:

DRAWN BY	DATE		DWG. NO.	
CHECKED BY	SCALE	N.T.S.	TYPICAL 5	
APPROVED BY	SHEET	1 OF 1		

TYPICAL GREENFIELD WORKSPACE
DITCH AND SPOIL SIDE TOP SOIL SALVAGE



PLAN/PROFILE VIEW

NOTES:

1. USE FOR 14-INCH OR GREATER DIAMETER PIPELINE.
2. THE DIMENSIONS SHOWN ON THIS FIGURE ARE TYPICAL.
3. VARIATIONS FOR STAGING AREAS MAY BE NECESSARY DUE TO SITE-SPECIFIC TERRAIN FEAUTURES; HOWEVER, UNLESS OTHERWISE INDICATED IN COLUMBIA'S ENVIRONMENTAL MANAGEMENT & CONSTRUCTION PLANS, THE MAXIMUM WIDTH OF CONSTRUCTION WORK AREA WILL BE 110 FEET.

PRELIMINARY

Appendix C-7

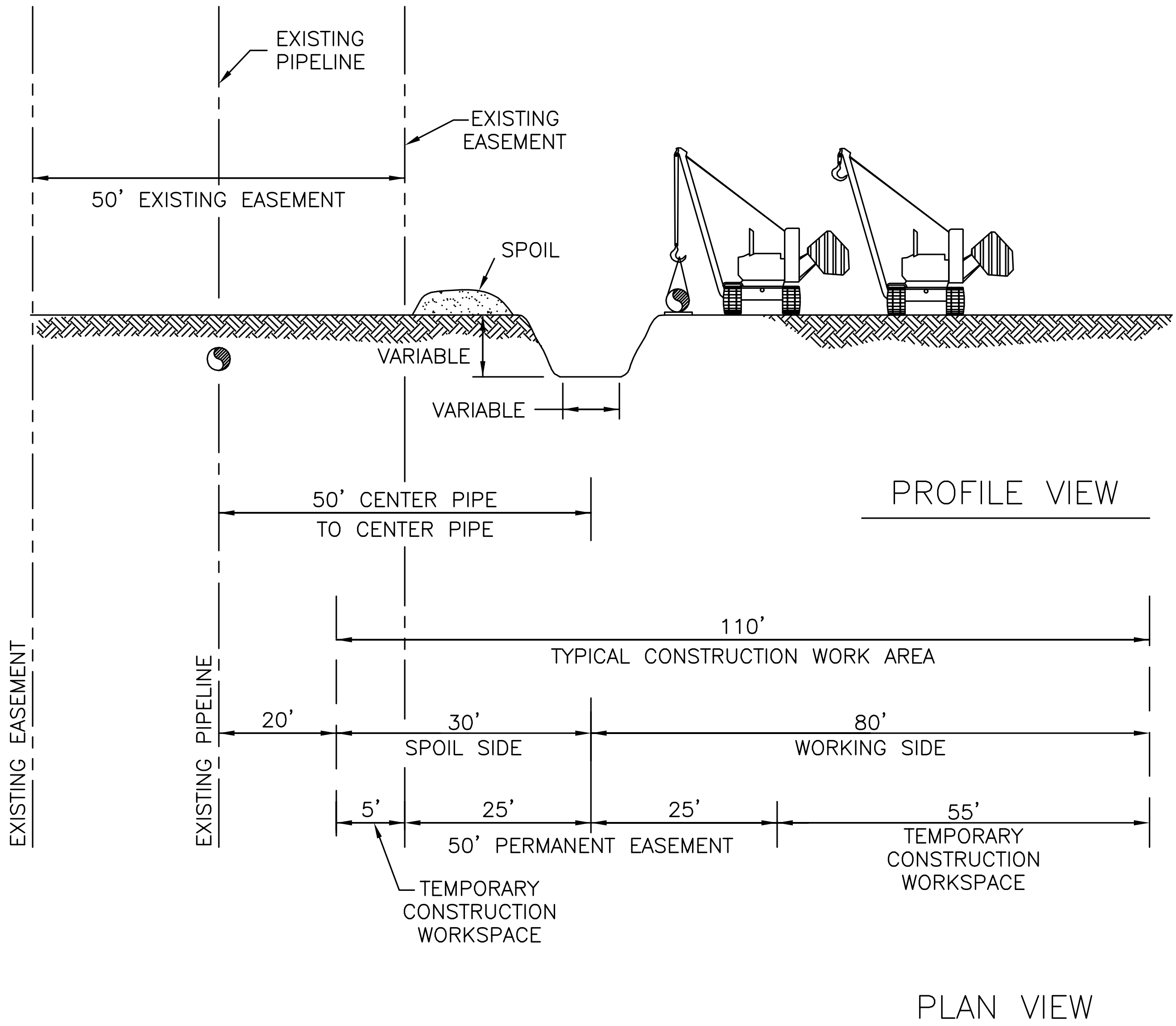
TYPICAL GREENFIELD WORKSPACE DITCH AND SPOIL SIDE TOP SOIL SALVAGE

LEACH XPRESS PROJECT

File No.:

DRAWN BY	DATE		DWG. NO.
CHECKED BY	SCALE	N.T.S.	TYPICAL 6
APPROVED BY	SHEET	1 of 1	

TYPICAL CONFIGURATION FOR PARALLELING TO EXISTING PIPELINES



NOTES:

1. USE FOR 14-INCH OR GREATER DIAMETER PIPELINE.
2. THE DIMENSIONS SHOWN ON THIS FIGURE ARE TYPICAL.
3. VARIATIONS FOR STAGING AREAS MAY BE NECESSARY DUE TO SITE-SPECIFIC TERRAIN FEAUTURES; HOWEVER, UNLESS OTHERWISE INDICATED IN COLUMBIA'S ENVIRONMENTAL MANAGEMENT & CONSTRUCTION PLANS, THE MAXIMUM WIDTH OF CONSTRUCTION WORK AREA WILL BE 110 FEET.

PRELIMINARY

Appendix C-8

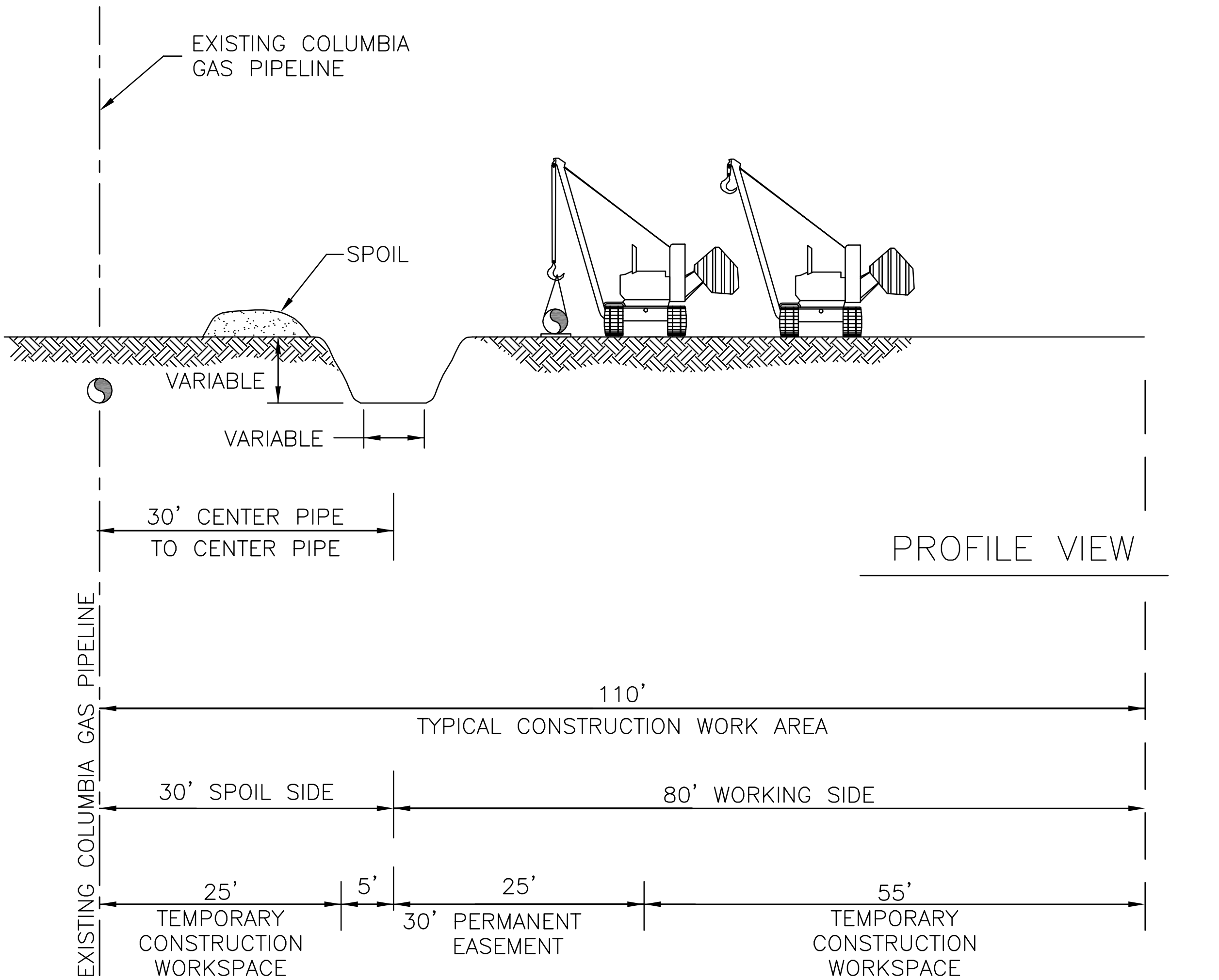
TYPICAL CONFIGURATION FOR PARALLELING TO EXISTING PIPELINES

LEACH XPRESS PROJECT

File No.:

DRAWN BY	DATE		DWG. NO.	
CHECKED BY	SCALE	N.T.S.	TYPICAL 7	
APPROVED BY	SHEET	1 of 1		

TYPICAL CONFIGURATION FOR CO-LOCATING WITH EXISTING COLUMBIA PIPELINES - 30' EASEMENT



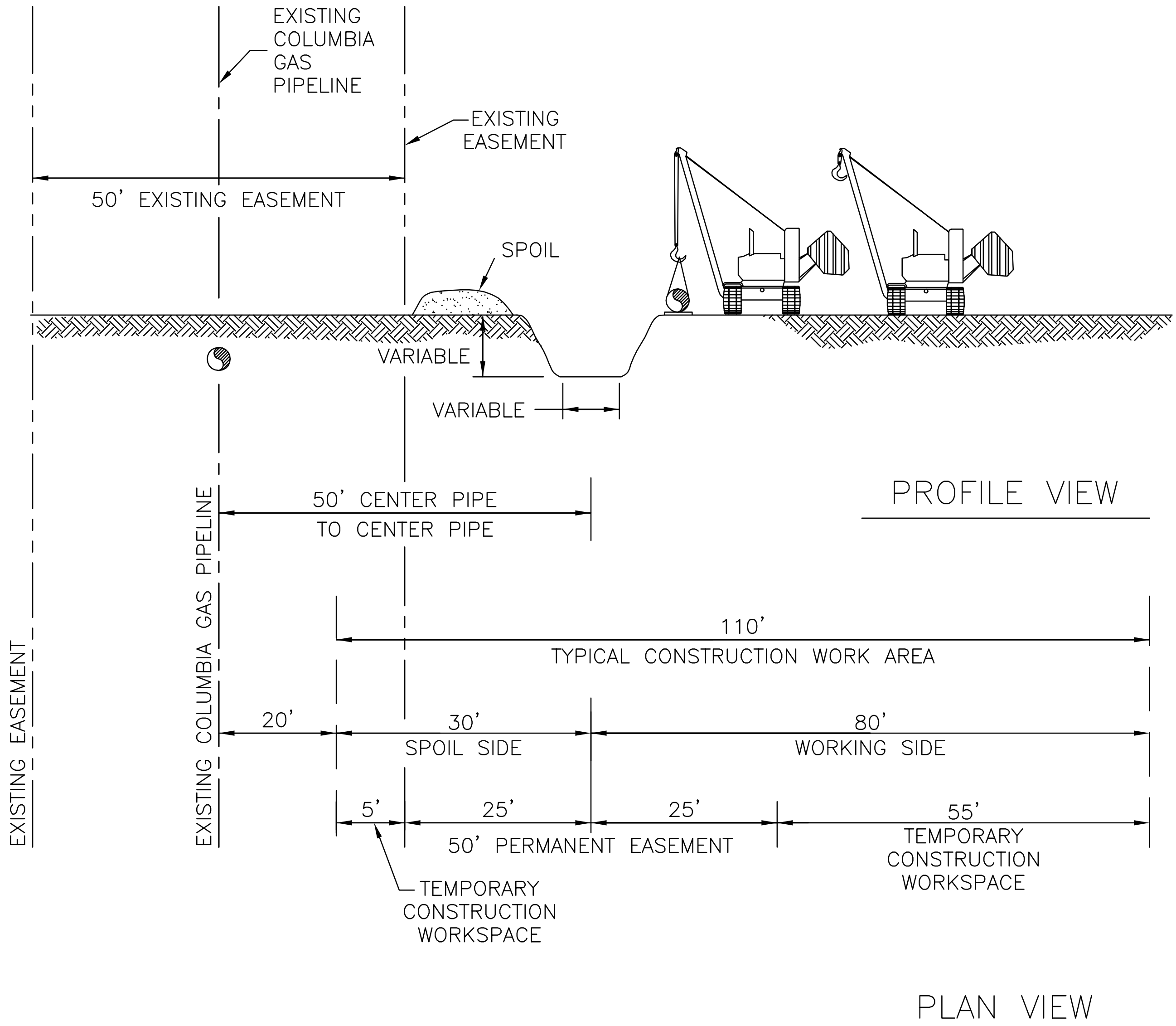
NOTES:

1. USE FOR 14-INCH OR GREATER DIAMETER PIPELINE.
2. THE DIMENSIONS SHOWN ON THIS FIGURE ARE TYPICAL.
3. VARIATIONS FOR STAGING AREAS MAY BE NECESSARY DUE TO SITE-SPECIFIC TERRAIN FEAUTURES; HOWEVER, UNLESS OTHERWISE INDICATED IN COLUMBIA'S ENVIRONMENTAL MANAGEMENT & CONSTRUCTION PLANS, THE MAXIMUM WIDTH OF CONSTRUCTION WORK AREA WILL BE 110 FEET.

PRELIMINARY

Appendix C-9	TYPICAL CONFIGURATION FOR CO-LOCATING WITH EXISTING COLUMBIA PIPELINES - 30' EASEMENT			
	File No.:	LEACH XPRESS PROJECT		
		DRAWN BY	DATE	DWG. NO. TYPICAL 8A
		CHECKED BY	SCALE N.T.S.	
		APPROVED BY	SHEET 1 of 1	

TYPICAL CONFIGURATION FOR PARALLELING TO EXISTING COLUMBIA PIPELINES - 50' EASEMENT



NOTES:

1. USE FOR 14–INCH OR GREATER DIAMETER PIPELINE.
2. THE DIMENSIONS SHOWN ON THIS FIGURE ARE TYPICAL.
3. VARIATIONS FOR STAGING AREAS MAY BE NECESSARY DUE TO SITE–SPECIFIC TERRAIN FEAUTURES; HOWEVER, UNLESS OTHERWISE INDICATED IN COLUMBIA'S ENVIRONMENTAL MANAGEMENT & CONSTRUCTION PLANS, THE MAXIMUM WIDTH OF CONSTRUCTION WORK AREA WILL BE 110 FEET.

PRELIMINARY

Appendix C-10

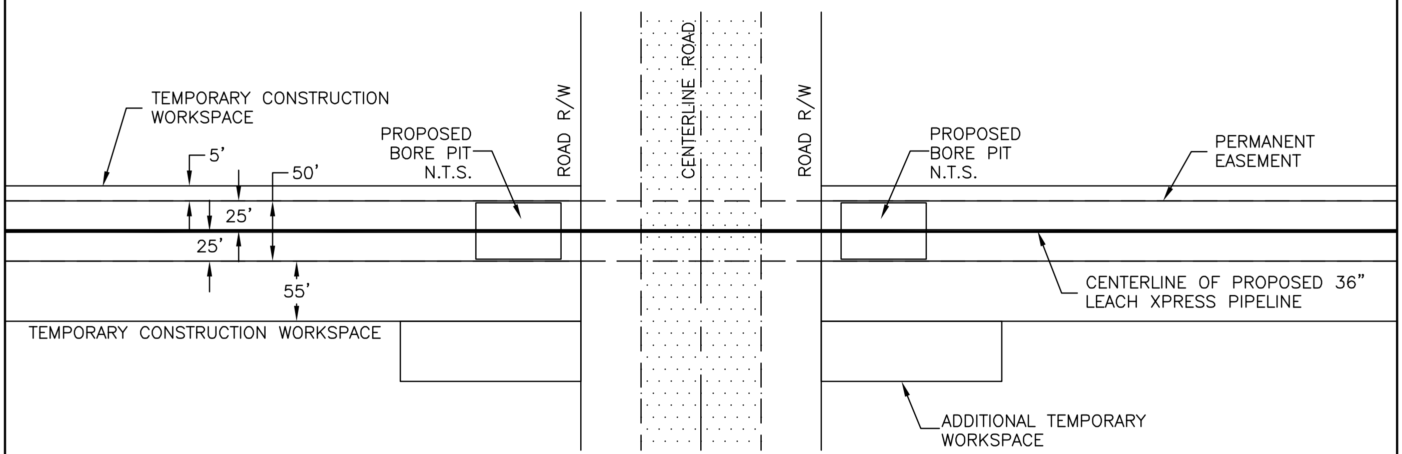
TYPICAL CONFIGURATION FOR PARALLELING TO EXISTING COLUMBIA PIPELINES - 50' EASEMENT

LEACH XPRESS PROJECT

File No.:

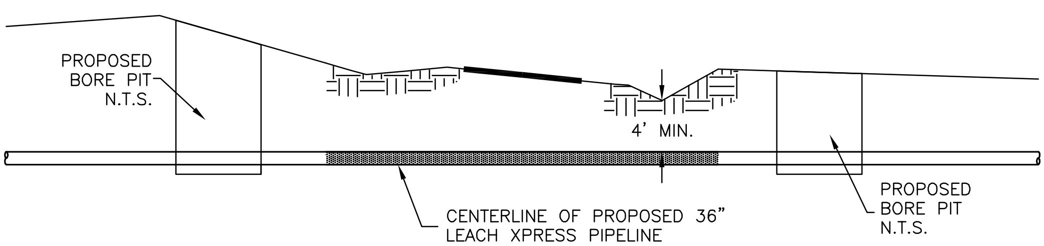
DRAWN BY	DATE		DWG. NO.	TYPICAL 8B
CHECKED BY	SCALE	N.T.S.		
APPROVED BY	SHEET	1 of 1		

TYPICAL BORED ROAD CROSSING



PLAN VIEW

N.T.S.



PROFILE VIEW

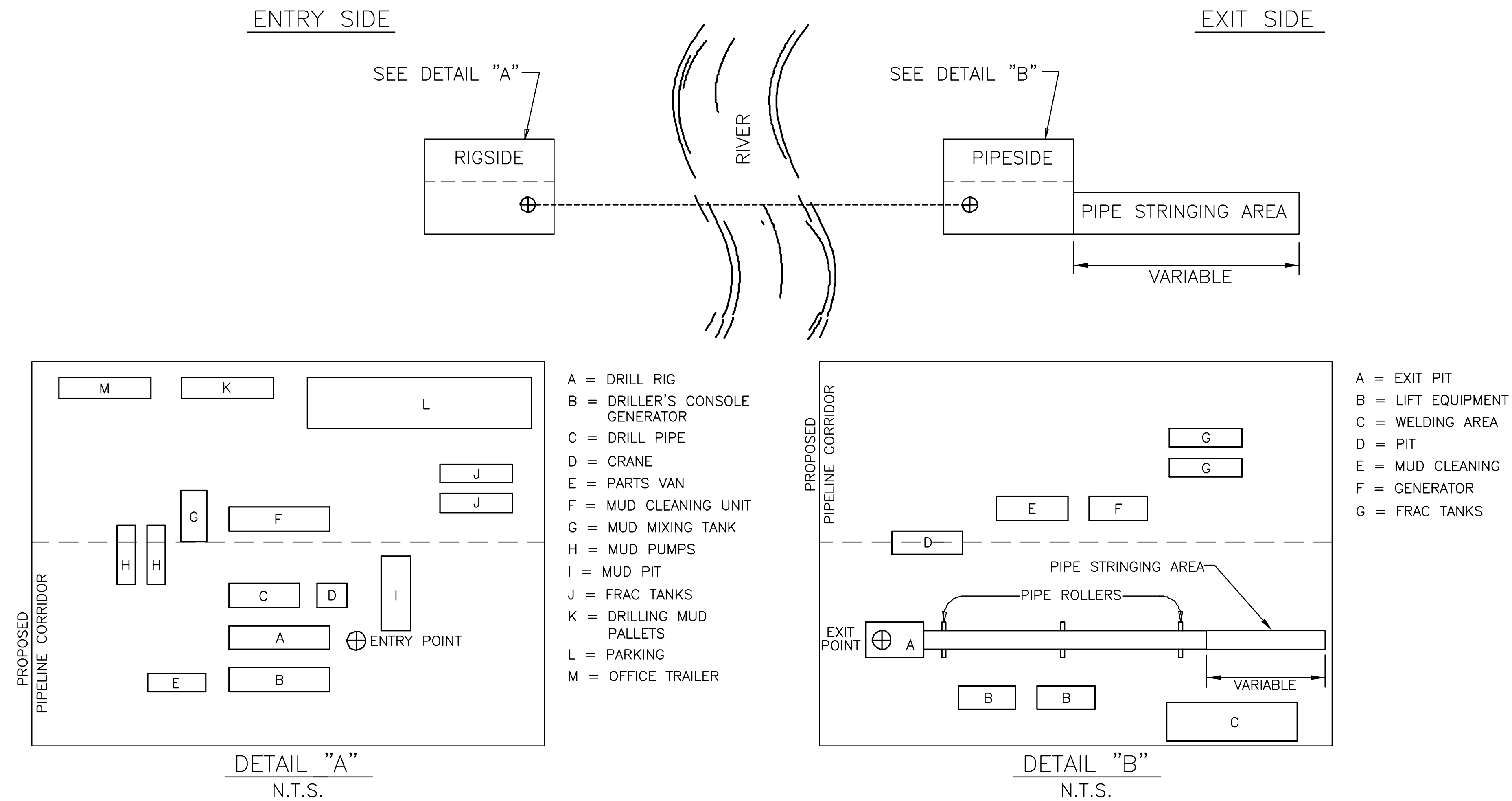
N.T.S.

NOTES:

1. CONSTRUCTION WORK AREA WILL TYPICALLY BE 160 FEET WIDE.

PRELIMINARY

Appendix C-11	TYPICAL BORED ROAD CROSSING		
File No.:	LEACH XPRESS PROJECT		
	DRAWN BY	DATE	DWG. NO. TYPICAL 9
	CHECKED BY	SCALE N.T.S.	
	APPROVED BY	SHEET 1 of 1	



PRELIMINARY

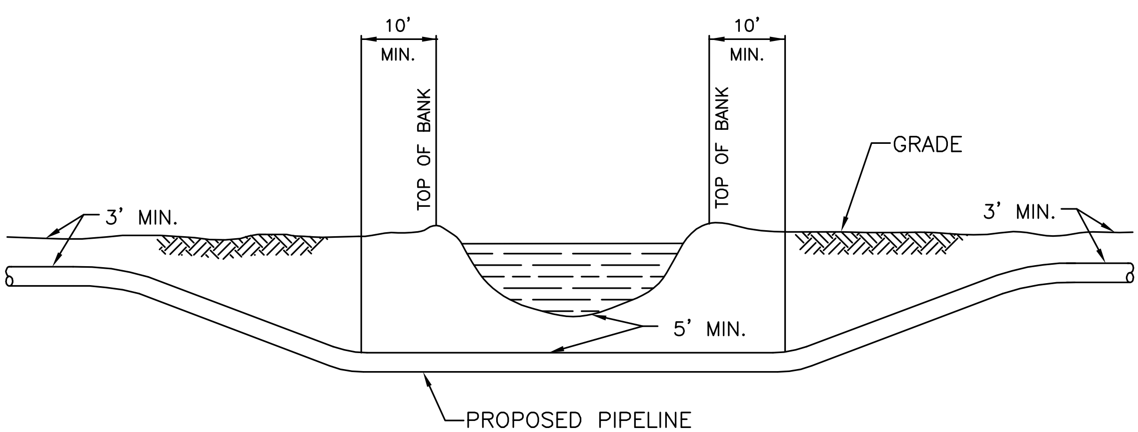
Appendix C-12

TYPICAL HDD CONFIGURATION

LEACH XPRESS PROJECT

File No.:

DRAWN BY	DATE		DWG. NO.
CHECKED BY	SCALE	N.T.S.	TYPICAL 10
APPROVED BY	SHEET	1 OF 1	

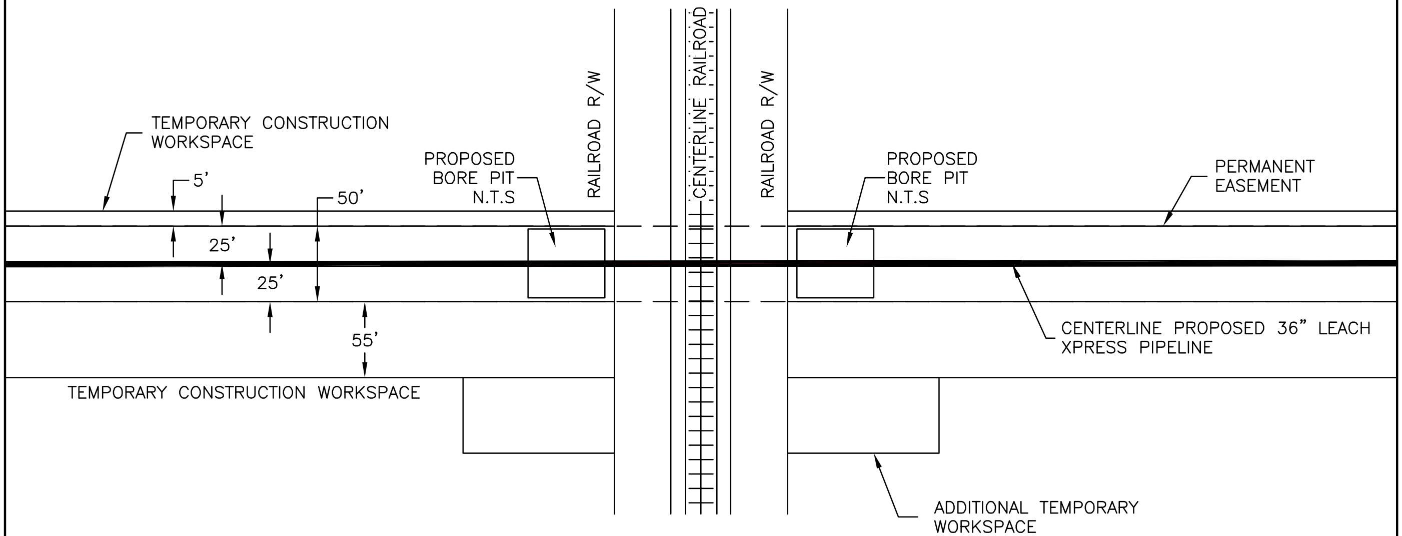


TYPICAL WATERBODY CROSSING

PRELIMINARY

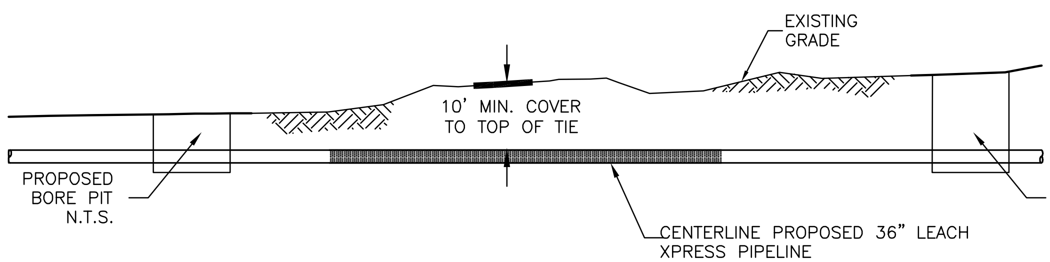
Appendix C-13	TYPICAL WATERBODY CROSSING			
	LEACH XPRESS PROJECT			
File No.:	DRAWN BY	DATE		DWG. NO.
	CHECKED BY	SCALE	N.T.S.	TYPICAL 11
	APPROVED BY	SHEET	1 OF 1	

TYPICAL BORED RAILROAD CROSSING



PLAN VIEW

N.T.S.



PROFILE VIEW

N.T.S.

NOTES:

1. CONSTRUCTION WORK AREA WILL TYPICALLY BE 160 FEET WIDE.

PRELIMINARY

Appendix C-14

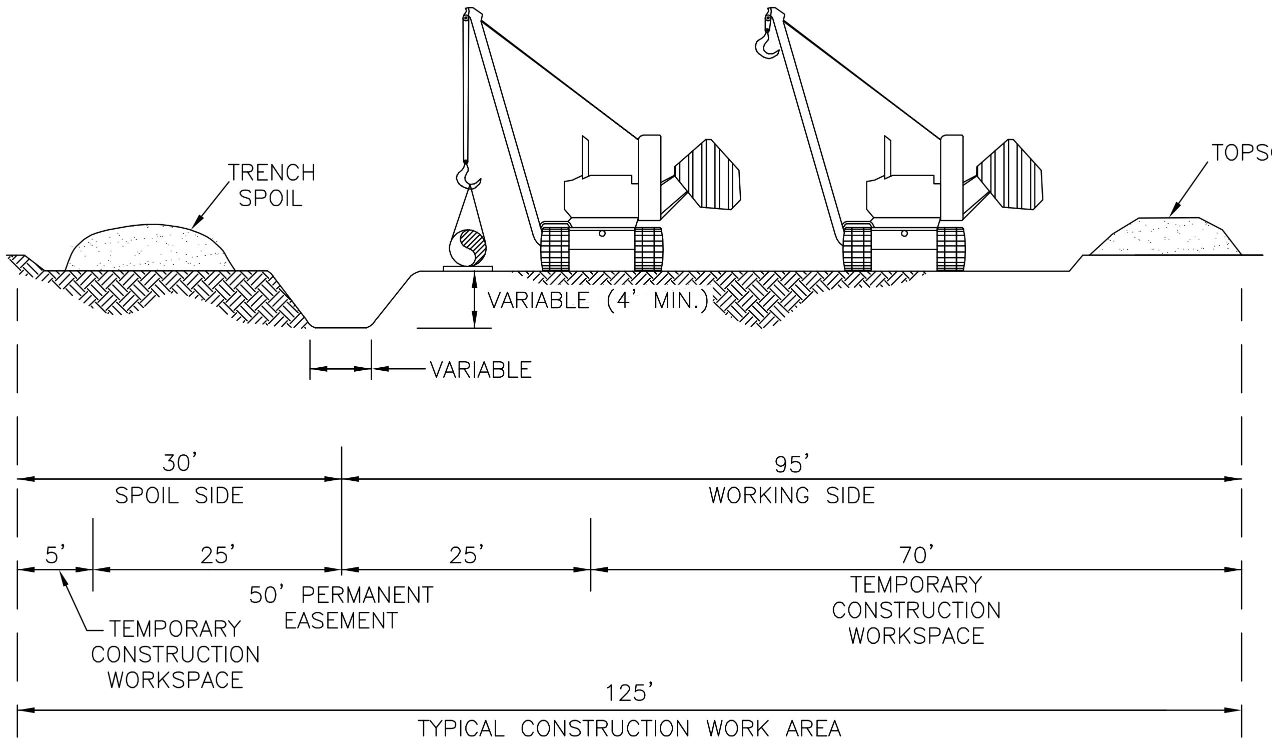
TYPICAL BORED RAILROAD CROSSING

LEACH XPRESS PROJECT

File No.:

DRAWN BY	DATE	DWG. NO.
CHECKED BY	SCALE N.T.S.	TYPICAL 12
APPROVED BY	SHEET 1 of 1	

TYPICAL STEEP SLOPE WORKSPACE - LEX MP 0.00-38.98



PLAN/PROFILE VIEW

NOTES:

1. USE FOR 14-INCH OR GREATER DIAMETER PIPELINE.
2. THE DIMENSIONS SHOWN ON THIS FIGURE ARE TYPICAL.
3. VARIATIONS FOR STAGING AREAS MAY BE NECESSARY DUE TO SITE-SPECIFIC TERRAIN FEAUTURES; HOWEVER, UNLESS OTHERWISE INDICATED IN COLUMBIA'S ENVIRONMENTAL MANAGEMENT & CONSTRUCTION PLANS, THE MAXIMUM WIDTH OF CONSTRUCTION WORK AREA WILL BE 125 FEET.
4. OTHER CONFIGURATIONS OF TOPSOIL AND SUBSOIL ARE ACCEPTABLE PROVIDED THEY ARE KEPT SEPARATE.
5. UP TO 12 INCHES OF TOPSOIL REMOVED.
6. TOPSOIL AND SUBSOIL PILES WILL BE ADEQUATELY PROTECTED FROM EROSION AND SEDIMENTATION BY USE OF SEDIMENT FILTER DEVICES OR MULCH.
7. A TYPICAL CORRIDOR WIDTH OF 125 FEET IN UPLANDS IS REQUIRED FOR LEX FROM MP 0.00 TO MP 39.98, AS ADDITIONAL SPACE WILL BE NEEDED TO PROVIDE FOR SAFE AND EFFICIENT CONSTRUCTION OF THE PIPELINE THROUGH HILLY TERRAIN AND STEEP SLOPE CONDITIONS.

PRELIMINARY

Appendix C-15

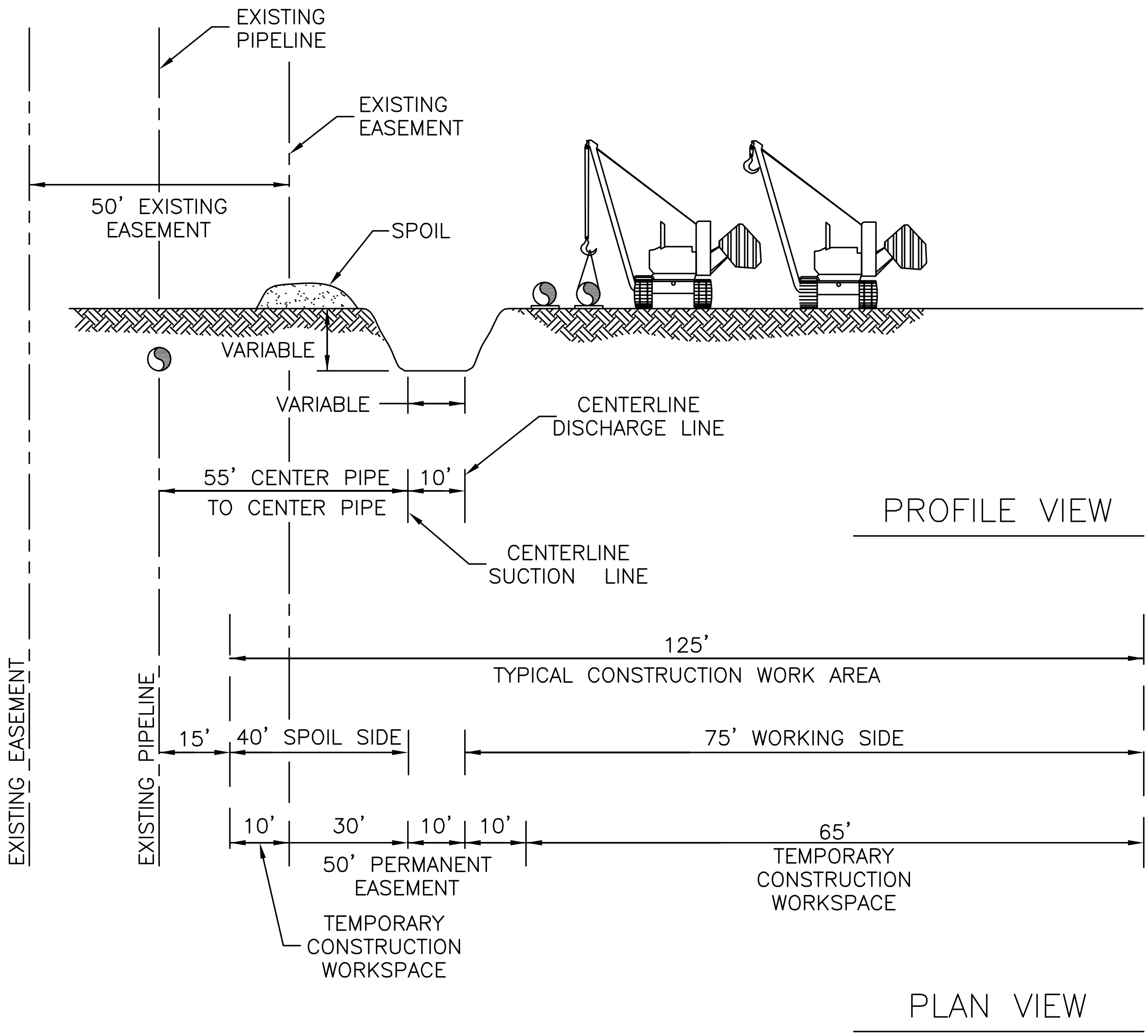
TYPICAL STEEP SLOPE WORKSPACE - LEX MP 0.00-38.98

LEACH XPRESS PROJECT

File No.:

DRAWN BY	DATE		DWG. NO.	TYPICAL 13
CHECKED BY	SCALE	N.T.S.		
APPROVED BY	SHEET	1 of 1		

TYPICAL SUCTION AND DISCHARGE LINE WORKSPACE



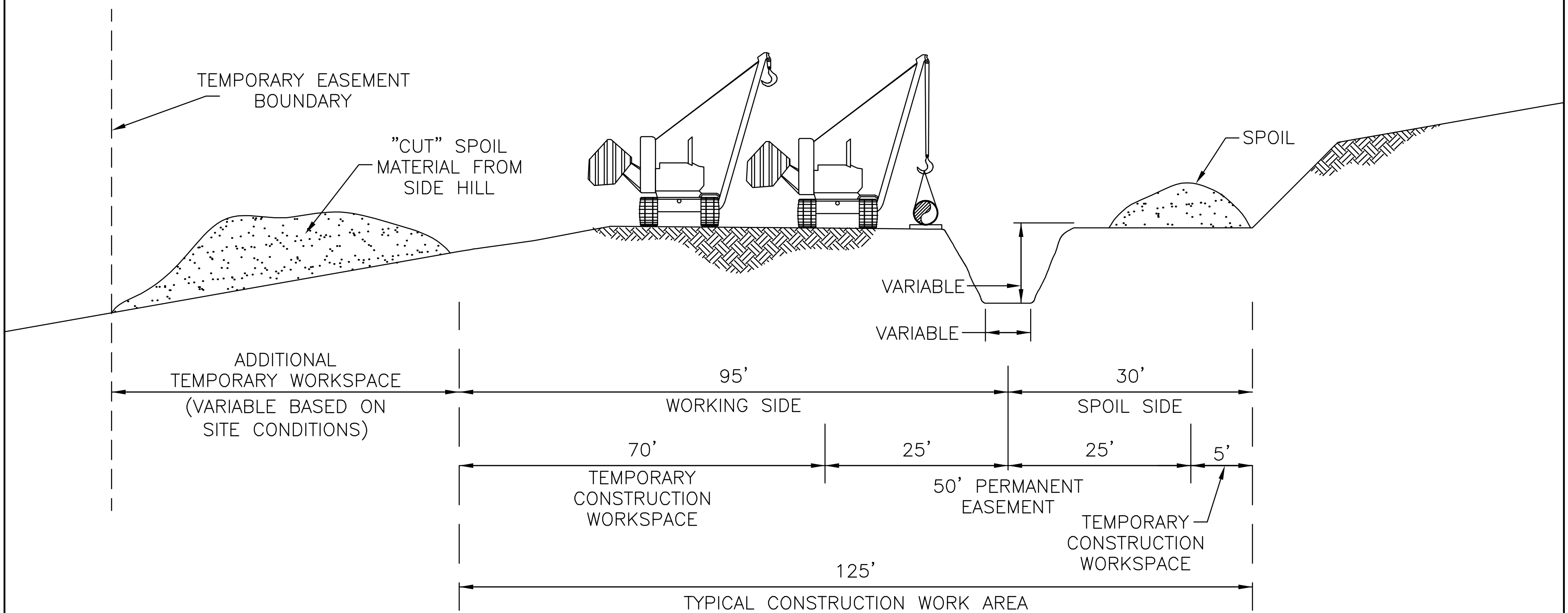
NOTES:

1. USE FOR 14–INCH OR GREATER DIAMETER PIPELINE.
2. THE DIMENSIONS SHOWN ON THIS FIGURE ARE TYPICAL.
3. VARIATIONS FOR STAGING AREAS MAY BE NECESSARY DUE TO SITE–SPECIFIC TERRAIN FEAUTURES; HOWEVER, UNLESS OTHERWISE INDICATED IN COLUMBIA'S ENVIRONMENTAL MANAGEMENT & CONSTRUCTION PLANS, THE MAXIMUM WIDTH OF CONSTRUCTION WORK AREA WILL BE 125 FEET.

PRELIMINARY

Appendix C-16

TYPICAL SUCTION AND DISCHARGE LINE WORKSPACE			
LEACH XPRESS PROJECT			
File No.:			
DRAWN BY	DATE		DWG. NO.
CHECKED BY	SCALE	N.T.S.	TYPICAL 14
APPROVED BY	SHEET	1 of 1	



PROFILE

NOTES:

1. USE FOR 14–INCH OR GREATER DIAMETER PIPELINE.
2. THE DIMENSIONS SHOWN ON THIS FIGURE ARE TYPICAL.
3. VARIATIONS FOR STAGING AREAS MAY BE NECESSARY DUE TO SITE–SPECIFIC TERRAIN FEAUTURES; HOWEVER, UNLESS OTHERWISE INDICATED IN COLUMBIA'S ENVIRONMENTAL MANAGEMENT & CONSTRUCTION PLANS, THE MAXIMUM WIDTH OF CONSTRUCTION WORK AREA WILL BE 110 FEET.
4. A TYPICAL CORRIDOR WIDTH OF 125 FEET IN UPLANDS IS REQUIRED FOR LEX FROM MP 0.00 TO MP 39.98, AS ADDITIONAL SPACE WILL BE NEEDED TO PROVIDE FOR SAFE AND EFFICIENT CONSTRUCTION OF THE PIPELINE THROUGH HILLY TERRAIN AND STEEP SLOPE CONDITIONS.

PRELIMINARY

Appendix C-17

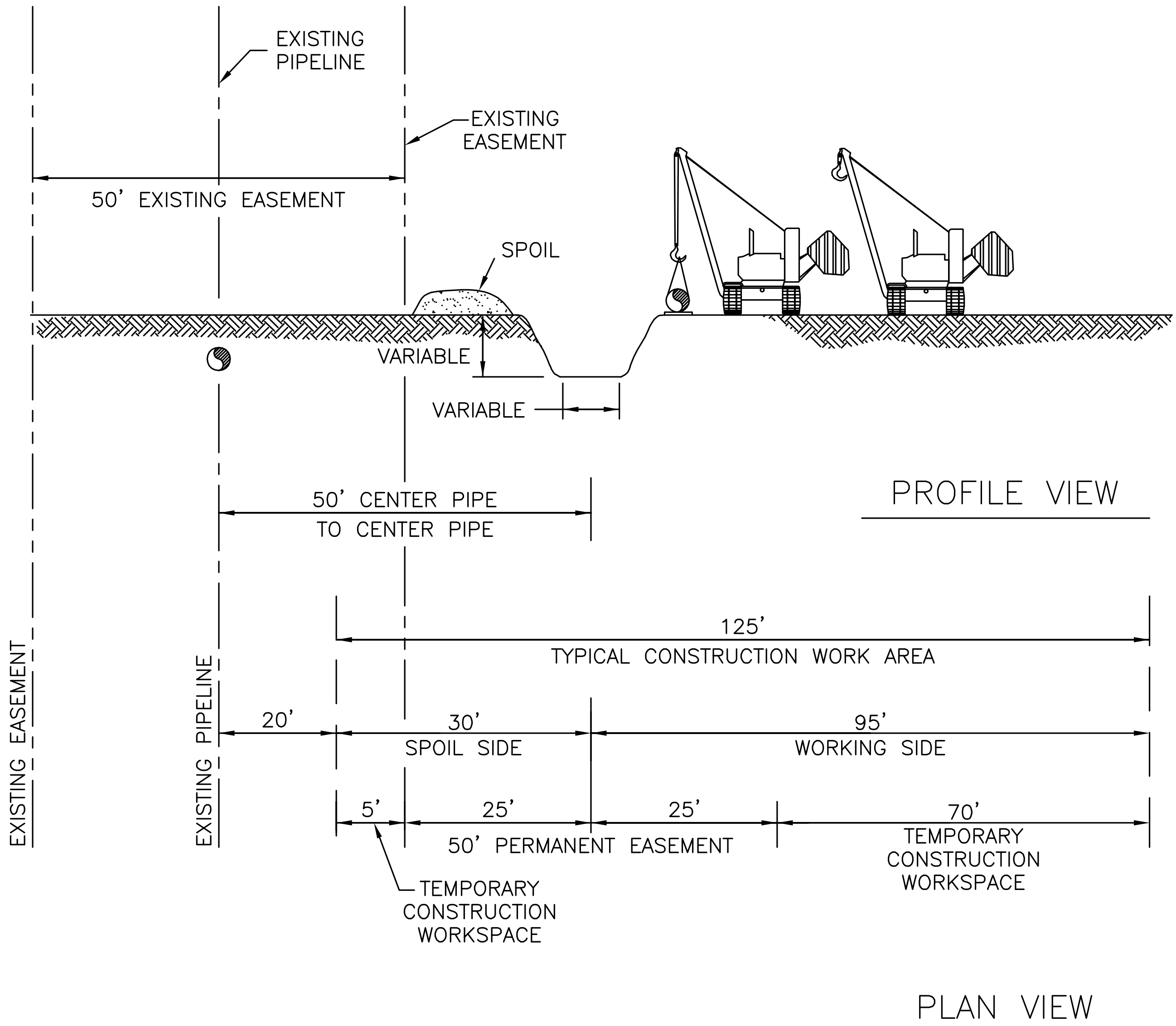
File No.:

TYPICAL STEEP SLOPE WITH SIDE SLOPE WORKSPACE- LEX MP 0.00-38.98

LEACH XPRESS PROJECT

DRAWN BY	DATE		DWG. NO.
CHECKED BY	SCALE	N.T.S.	TYPICAL 15
APPROVED BY	SHEET	1 OF 1	

TYPICAL CONFIGURATION FOR PARALLELING TO EXISTING PIPELINES - LEX MP 0.00-38.98



NOTES:

1. USE FOR 14–INCH OR GREATER DIAMETER PIPELINE.
2. THE DIMENSIONS SHOWN ON THIS FIGURE ARE TYPICAL.
3. VARIATIONS FOR STAGING AREAS MAY BE NECESSARY DUE TO SITE–SPECIFIC TERRAIN FEAUTURES; HOWEVER, UNLESS OTHERWISE INDICATED IN COLUMBIA'S ENVIRONMENTAL MANAGEMENT & CONSTRUCTION PLANS, THE MAXIMUM WIDTH OF CONSTRUCTION WORK AREA WILL BE 125 FEET.

PRELIMINARY

TYPICAL CONFIGURATION FOR PARALLELING TO EXISTING PIPELINES - LEX MP 0.00-38.98

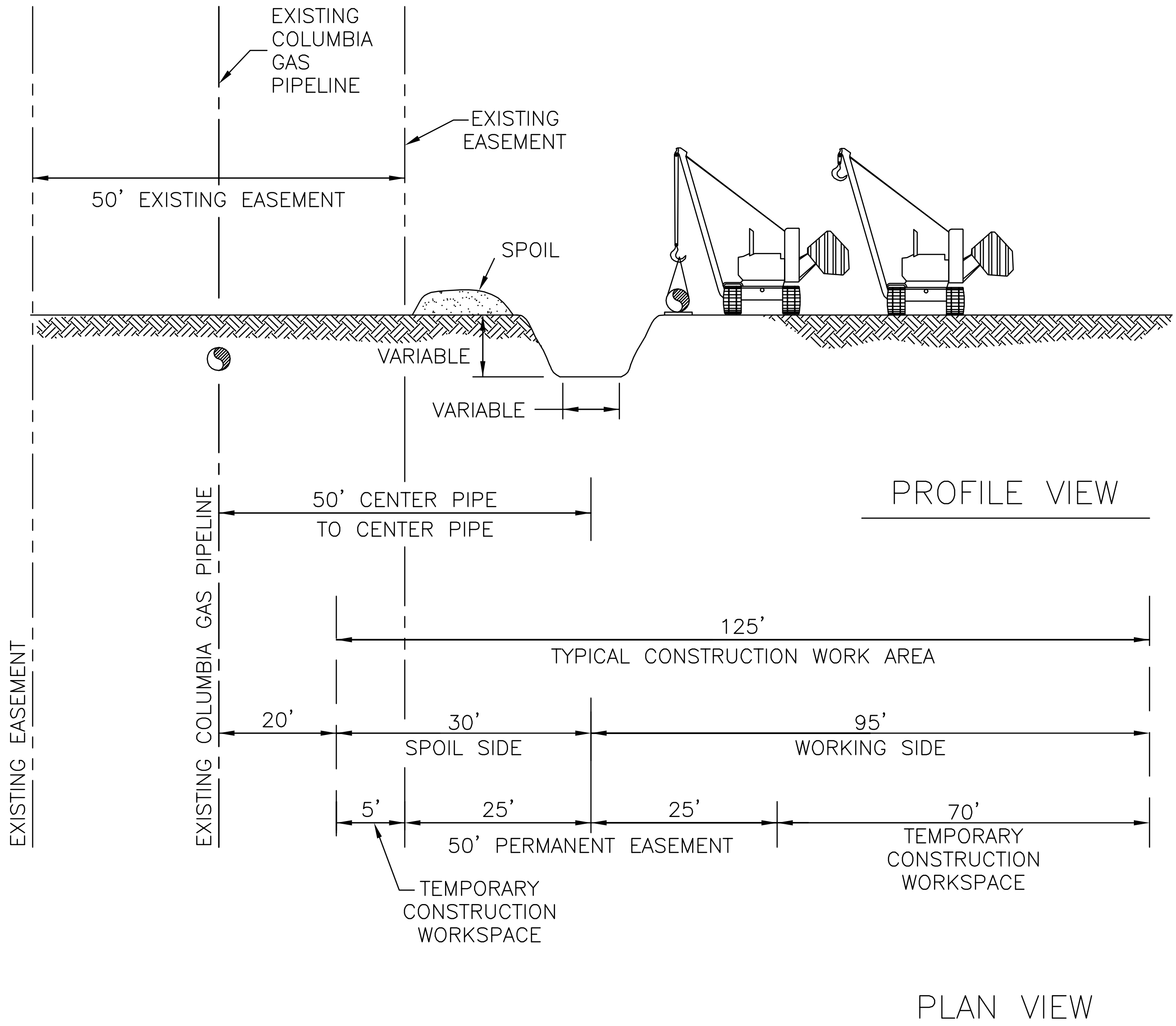
LEACH XPRESS PROJECT

Appendix C-18

File No.:

DRAWN BY	DATE	DWG. NO.
CHECKED BY	SCALE N.T.S.	TYPICAL 16
APPROVED BY	SHEET 1 of 1	

TYPICAL CONFIGURATION FOR PARALLELING TO EXISTING COLUMBIA PIPELINES - LEX MP 0.00-38.98



NOTES:

1. USE FOR 14-INCH OR GREATER DIAMETER PIPELINE.
2. THE DIMENSIONS SHOWN ON THIS FIGURE ARE TYPICAL.
3. VARIATIONS FOR STAGING AREAS MAY BE NECESSARY DUE TO SITE-SPECIFIC TERRAIN FEAUTURES; HOWEVER, UNLESS OTHERWISE INDICATED IN COLUMBIA'S ENVIRONMENTAL MANAGEMENT & CONSTRUCTION PLANS, THE MAXIMUM WIDTH OF CONSTRUCTION WORK AREA WILL BE 125 FEET.

PRELIMINARY

TYPICAL CONFIGURATION FOR PARALLELING TO EXISTING COLUMBIA PIPELINES - LEX MP 0.00-38.98

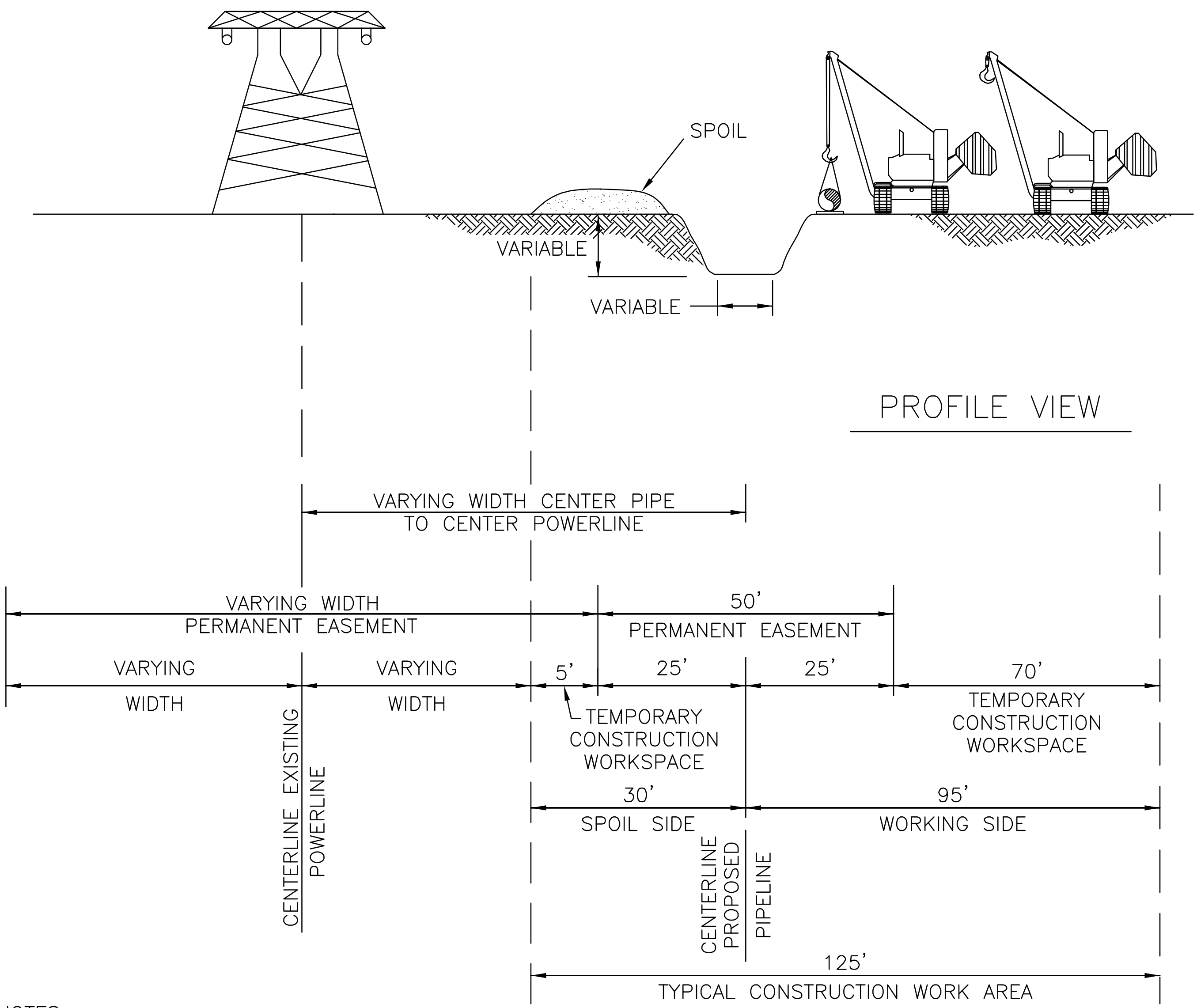
LEACH XPRESS PROJECT

Appendix C-19

File No.:

DRAWN BY	DATE	DWG. NO.
CHECKED BY	SCALE N.T.S.	TYPICAL 17
APPROVED BY	SHEET 1 of 1	

TYPICAL PARALLELING CONFIGURATION WITH POWERLINE - LEX MP 0.00-38.98



NOTES:

1. USE FOR 14-INCH OR GREATER DIAMETER PIPELINE.
2. THE DIMENSIONS SHOWN ON THIS FIGURE ARE TYPICAL.
3. VARIATIONS FOR STAGING AREAS MAY BE NECESSARY DUE TO SITE-SPECIFIC TERRAIN FEAUTURES; HOWEVER, UNLESS OTHERWISE INDICATED IN COLUMBIA'S ENVIRONMENTAL MANAGEMENT & CONSTRUCTION PLANS, THE MAXIMUM WIDTH OF CONSTRUCTION WORK AREA WILL BE 125 FEET.

PRELIMINARY

Appendix C-20

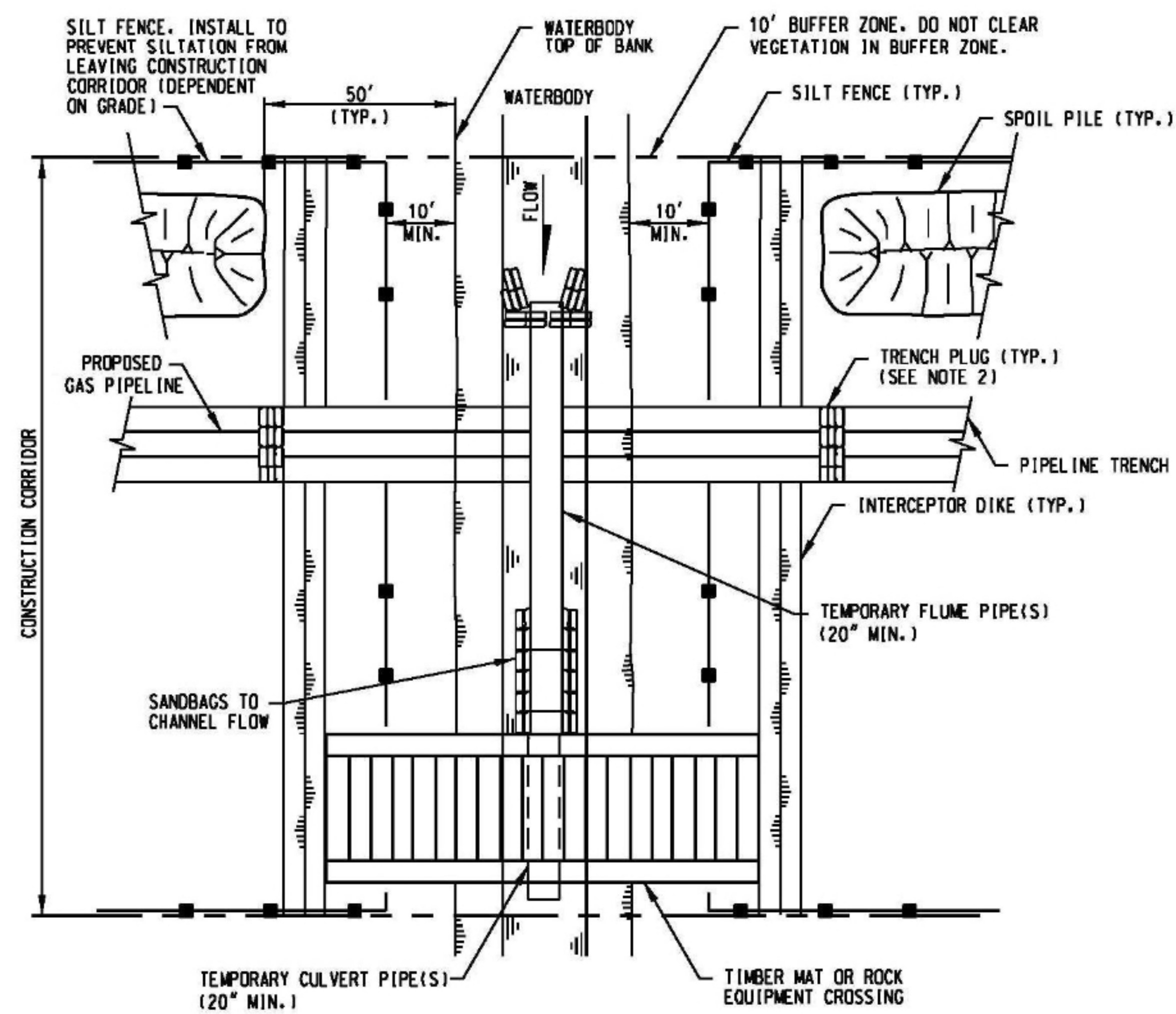
TYPICAL PARALLELING CONFIGURATION WITH POWERLINE - LEX MP 0.00-38.98

LEACH XPRESS PROJECT

File No.:

DRAWN BY	DATE	DWG. NO.
CHECKED BY	SCALE N.T.S.	TYPICAL 18
APPROVED BY	SHEET 1 of 1	

TYPICAL FLUMED CROSSING METHOD



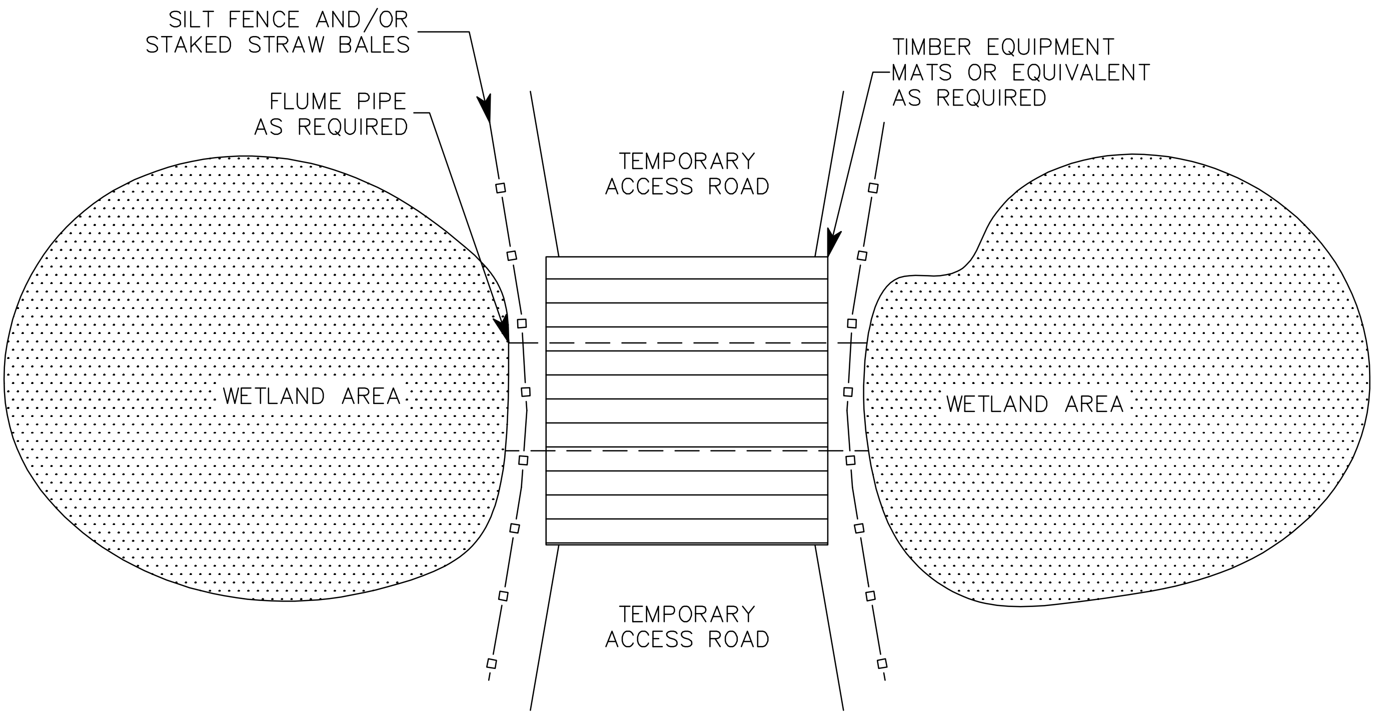
1. SILT FENCE AND INTERCEPTOR DIKE TO BE REMOVED ACROSS PIPELINE TRENCH DURING CONSTRUCTION OF PIPELINE. SILT FENCE AND INTERCEPTOR DIKES TO BE REPLACED AFTER BACKFILL OF TRENCH.

2. USE HARD OR SOFT PLUGS PRIOR TO PIPE INSTALLATION. INSTALL PERMANENT TRENCH PLUGS AFTER PIPE INSTALLATION AND PRIOR TO BACKFILLING PIPELINE TRENCH.

PRELIMINARY

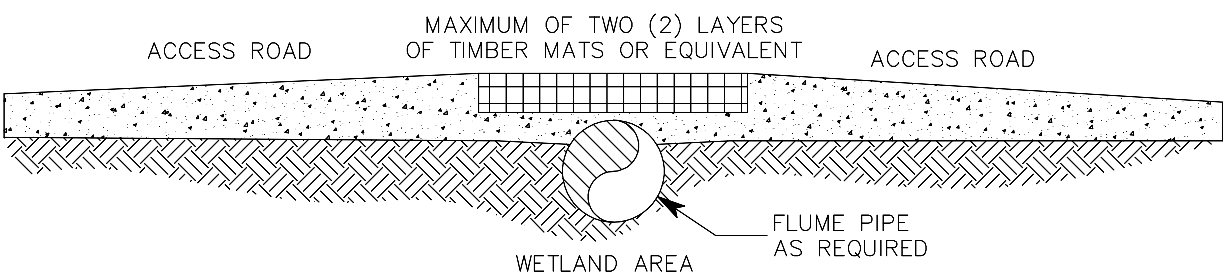
Appendix C-21	TYPICAL FLUMED CROSSING METHOD		
File No.:	LEACH XPRESS PROJECT		
DRAWN BY	DATE		DWG. NO.
CHECKED BY	SCALE	N.T.S.	TYPICAL 19
APPROVED BY	SHEET	1 of 1	

TYPICAL CONSTRUCTION WETLANDS ACCESS ROAD



PLAN VIEW

N.T.S.



PROFILE VIEW

N.T.S.

PRELIMINARY

Appendix C-22

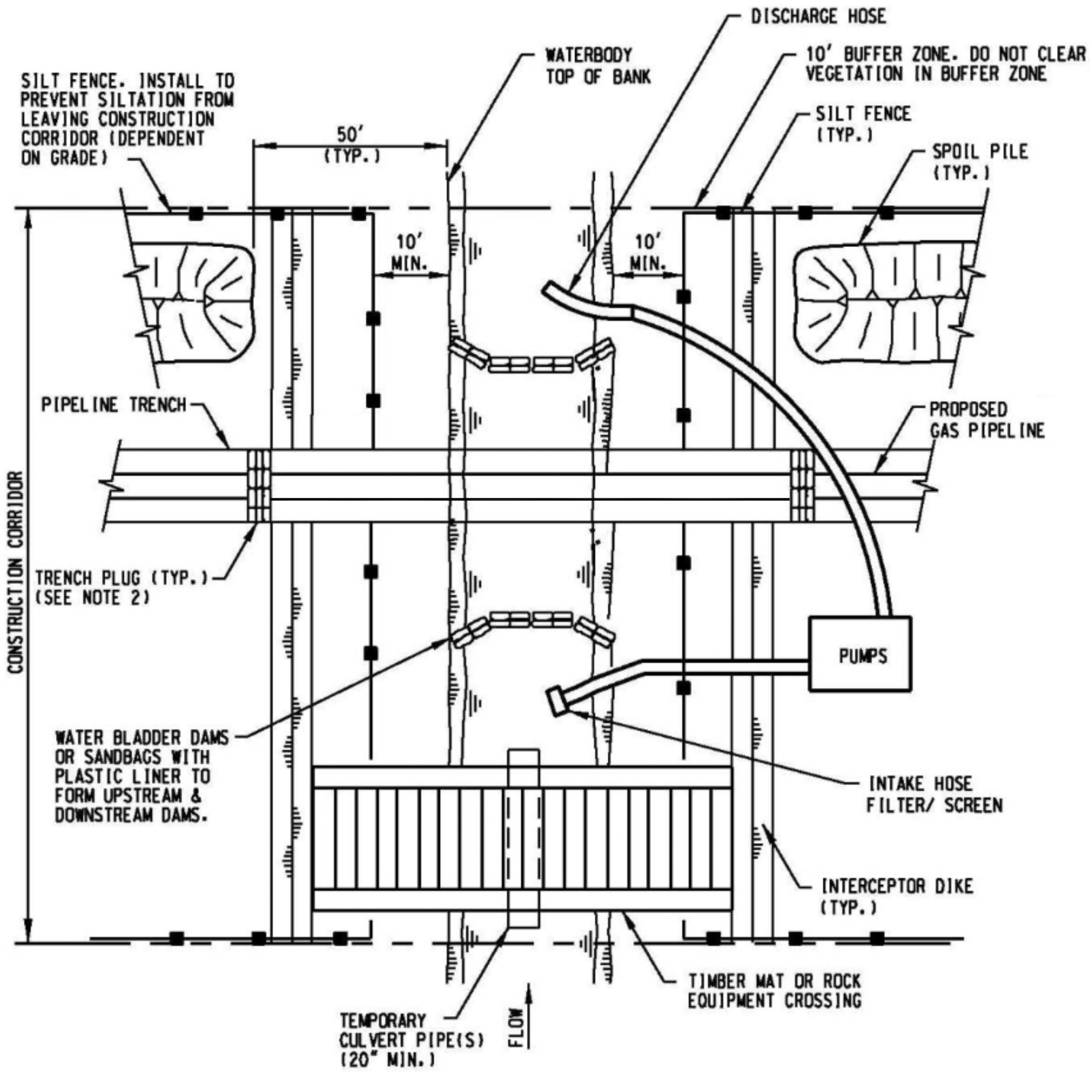
TYPICAL CONSTRUCTION WETLANDS ACCESS ROAD

File No.:

LEACH XPRESS PROJECT

DRAWN BY	DATE	DWG. NO.
CHECKED BY	SCALE N.T.S.	TYPICAL 20
APPROVED BY	SHEET 1 of 1	

TYPICAL DAM AND PUMP CROSSING METHOD



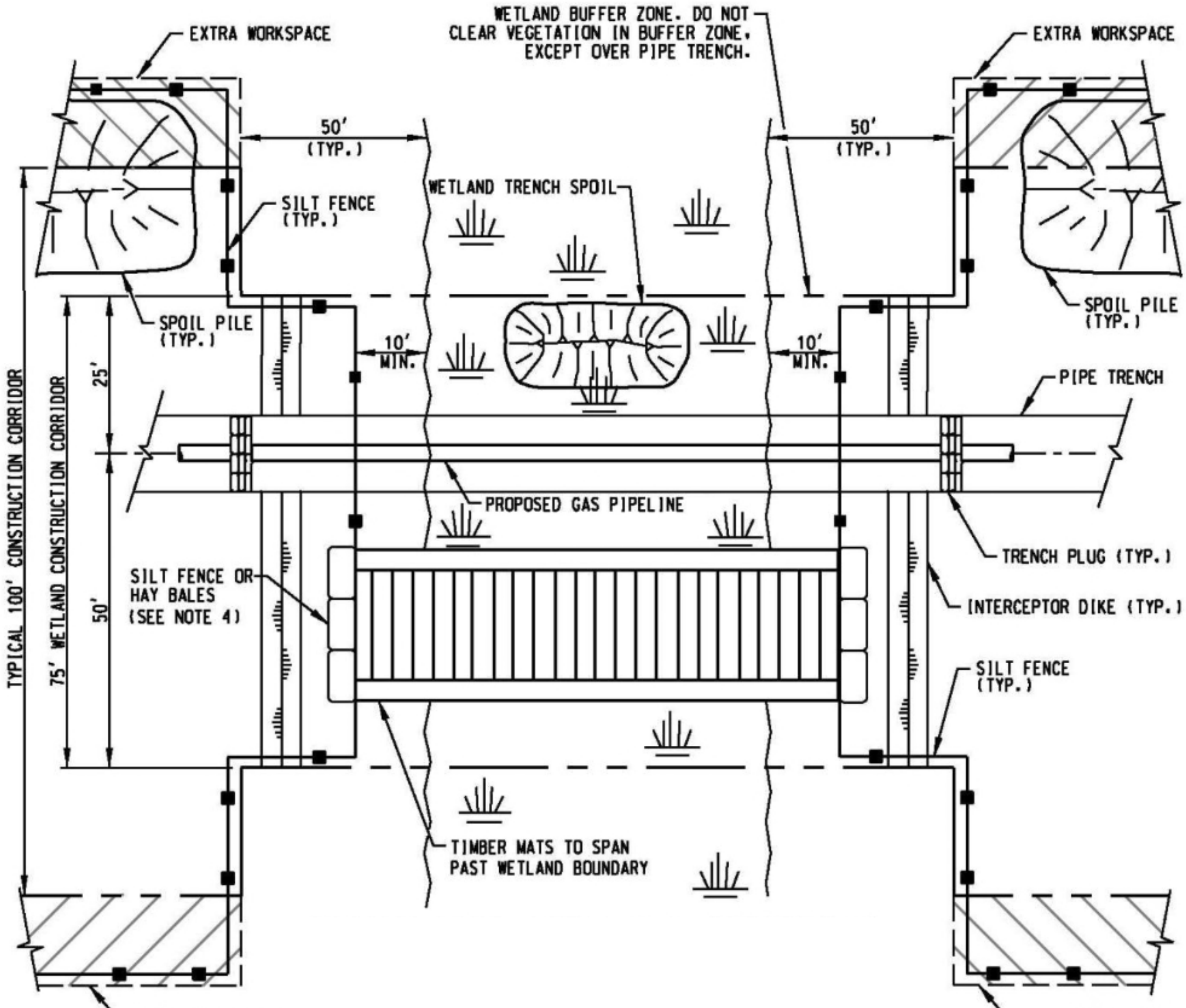
1. SILT FENCE AND INTERCEPTOR DIKE TO BE REMOVED ACROSS PIPELINE TRENCH DURING CONSTRUCTION OF PIPELINE. SILT FENCE AND INTERCEPTOR DIKES TO BE REPLACED AFTER BACKFILL OF TRENCH.

2. USE HARD OR SOFT PLUGS PRIOR TO PIPE INSTALLATION. INSTALL PERMANENT TRENCH PLUGS AFTER PIPE INSTALLATION AND PRIOR TO BACKFILLING PIPELINE TRENCH.

PRELIMINARY

Appendix C-23	TYPICAL DAM AND PUMP CROSSING METHOD			
File No.:	LEACH XPRESS PROJECT			
	DRAWN BY	DATE		DWG. NO.
	CHECKED BY	SCALE	N.T.S.	TYPICAL 21
	APPROVED BY	SHEET	1 of 1	

TYPICAL SATURATED WETLAND CROSSING



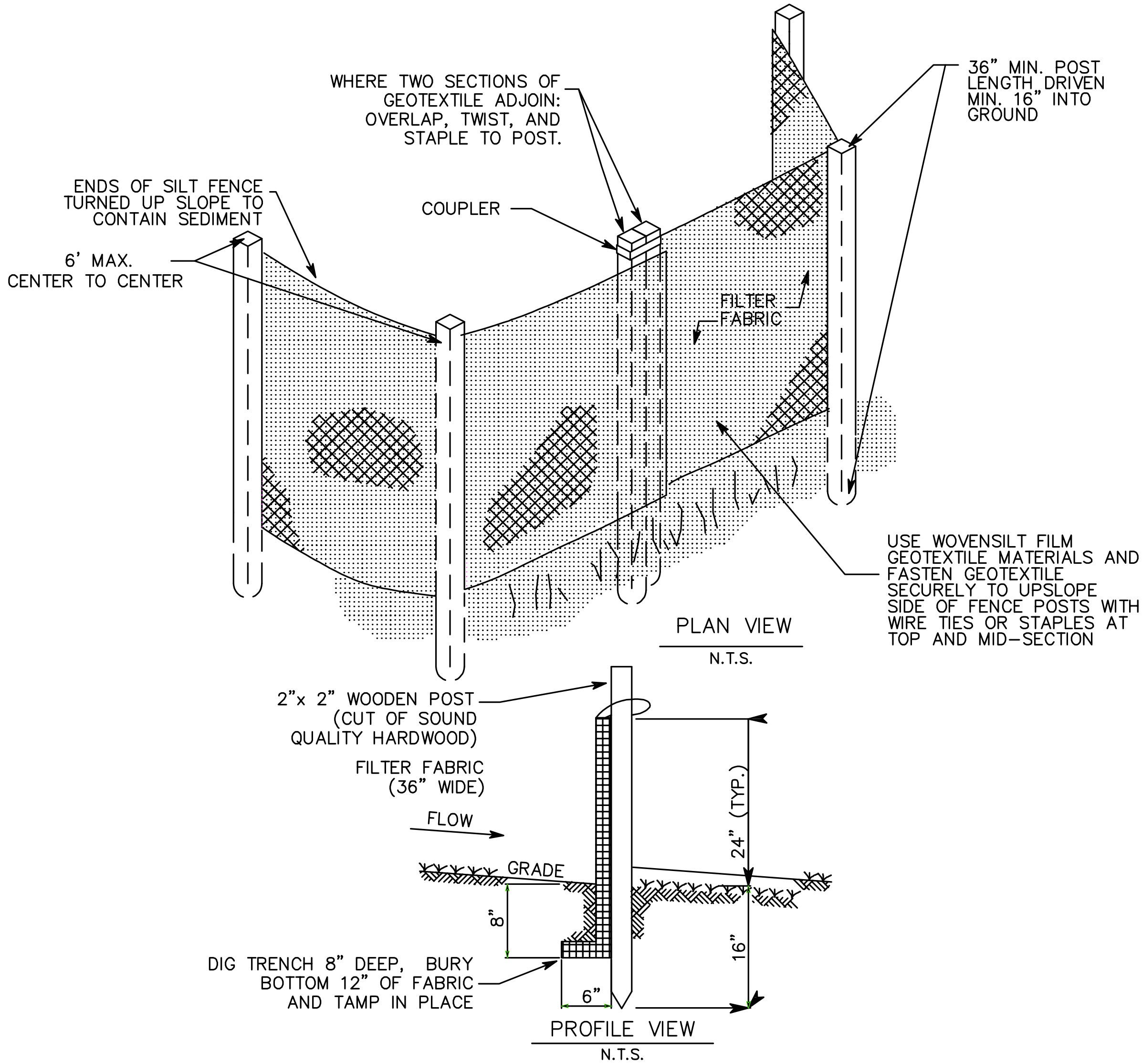
NOTE:

1. INSTALL PERMANENT INTERCEPTOR DIKES AT THE BASE OF ALL SLOPES ADJACENT TO THE WETLAND.
2. CONTRACTOR SHALL POSTPONE GRADING OF WORK AREA ADJACENT TO WETLAND UNTIL STAGING AREA IS PREPARED AND WORK IN THE WETLAND IS READY TO COMMENCE.
3. SILT FENCE OR HAY BALES SHALL BE PLACED IN THE GAP AT THE TIMBER MATS BY THE END OF EACH DAY OR PRIOR TO APPROACHING RAIN TO PREVENT SEDIMENT FLOW INTO WETLAND.
4. USE ADDITIONAL TIMBER MAT LAYERS TO RAISE CROSSING ABOVE GRADE WHERE POOR SOIL CONDITIONS EXIST.
5. SILT FENCE AND INTERCEPTOR DIKE TO BE REMOVED ACROSS PIPE TRENCH AND DURING CONSTRUCTION OF PIPELINE. SILT FENCE AND INTERCEPTOR DIKE TO BE REPLACED AFTER BACKFILL OF TRENCH.

PRELIMINARY

Appendix C-24	TYPICAL SATURATED WETLAND CROSSING			
	LEACH XPRESS PROJECT			
File No.:	DRAWN BY	DATE		DWG. NO.
	CHECKED BY	SCALE	N.T.S.	TYPICAL 22
	APPROVED BY	SHEET	1 of 1	

TYPICAL CONSTRUCTION SILT FENCE



INSTALLATION REQUIREMENTS:

- WHEN USING SILT FENCE, PLACE IT:
  - BETWEEN DISTURBED AREAS AND DOWN-SLOPE ENVIRONMENTAL RESOURCE AREAS
  - AT THE BASE OF ALL SLOPES NEXT TO WETLANDS, WATERBODIES, AND ROAD CROSSINGS
  - AT THE INLET AND OUTLET OF OPEN DRAINAGE STRUCTURES
  - EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
- USE SANDBAGS OR BACKFILLING TO KEY IN THE BOTTOM OF THE FABRIC WHERE IT IS NOT FEASIBLE TO TRENCH IT IN (LEDGES, ROCKY SOIL, LARGE ROOTS, ETC.)

MAINTENANCE REQUIREMENTS:

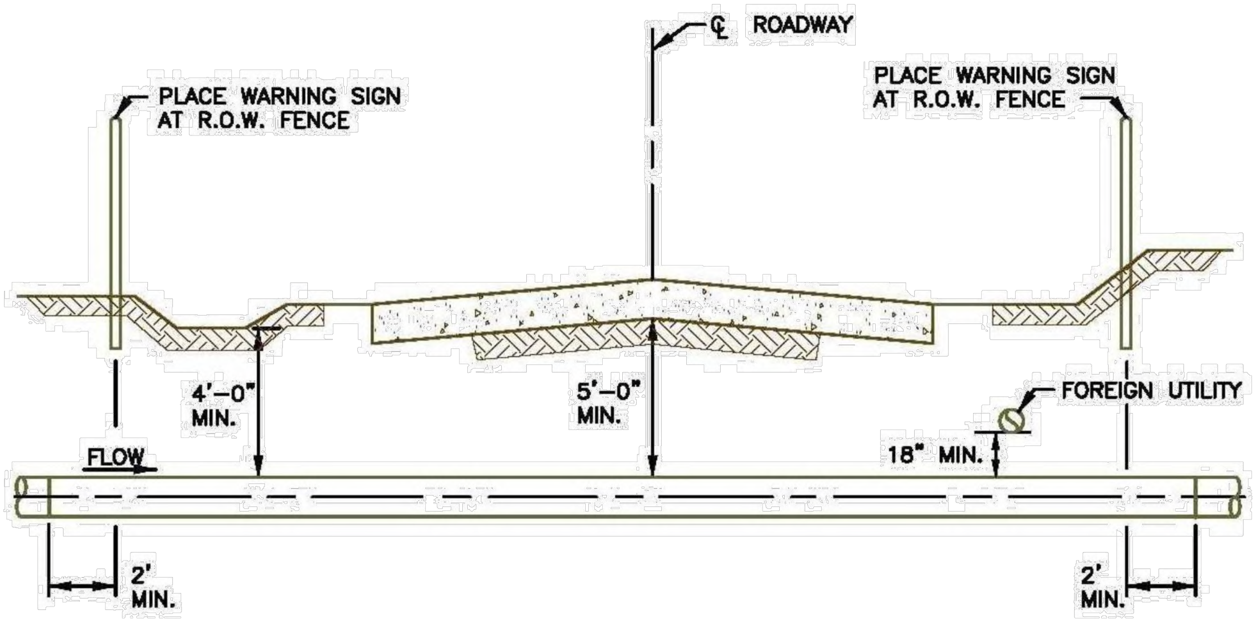
- INSPECT SILT FENCE:
  - DAILY IN AREAS OF ACTIVE CONSTRUCTION
  - WEEKLY IN AREAS WITH NO CONSTRUCTION
  - WITHIN 24 HOURS FOLLOWING EACH MAJOR STORM EVENT
- REPAIR OR REPLACE SILT FENCE IF GEOTEXTILE IS TORN OR UNDERMINING OF THE SILT FENCE OCCURS
- REMOVE ACCUMULATED SEDIMENTS TO AN UPLAND AREA WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDEMENT REACHES 25% OF FENCE HEIGHT.

PRELIMINARY

Appendix C-25

TYPICAL CONSTRUCTION SILT FENCE	
File No.:	LEACH XPRESS PROJECT
DRAWN BY	DATE
CHECKED BY	SCALE N.T.S.
APPROVED BY	SHEET 1 of 1
DWG. NO.	TYPICAL 23

TYPICAL OPEN-CUT ROAD CROSSING



NOTES:

1. CONTRACTOR SHALL INSTALL THE HEAVY WALL STEEL PIPE, BACKFILL AND REPLACE ROAD SURFACE IN ACCORDANCE WITH PERMIT ISSUED BY THE GOVERNMENT BODY HAVING JURISDICTION AND/OR IN ACCORDANCE WITH THE SPECIFICATIONS, WHICHEVER IS THE MOST STRINGENT.

2. THE PIPELINE SHALL CROSS AS NEAR TO RIGHT ANGLE AS POSSIBLE AND ECONOMICALLY PRACTICAL.

3. THE HEAVY WALL STEEL PIPE SHALL BE INSTALLED FROM THE R.O.W. LIMIT TO THE RIGHT–OF–WAY LIMIT AND EXTEND A MINIMUM OF 2 FEET BEYOND THE R.O.W. LIMITS.

4. THE HEAVY WALL STEEL PIPE WITHIN THE RIGHT–OF–WAY LIMITS SHALL BE FULLY EXTENDED DURING INSTALLATION.

5. ANY OPEN CUT TRENCH SHALL BE IN ACCORDANCE WITH STATE OR COUNTY SPECIFICATIONS AS DEFINED IN THE SPECIFICATION AND STANDARD. THE TRENCH SHALL BE BACKFILLED IN 8" LIFTS AND COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE PROCTOR COMPACTION TEST (ASTM D698).

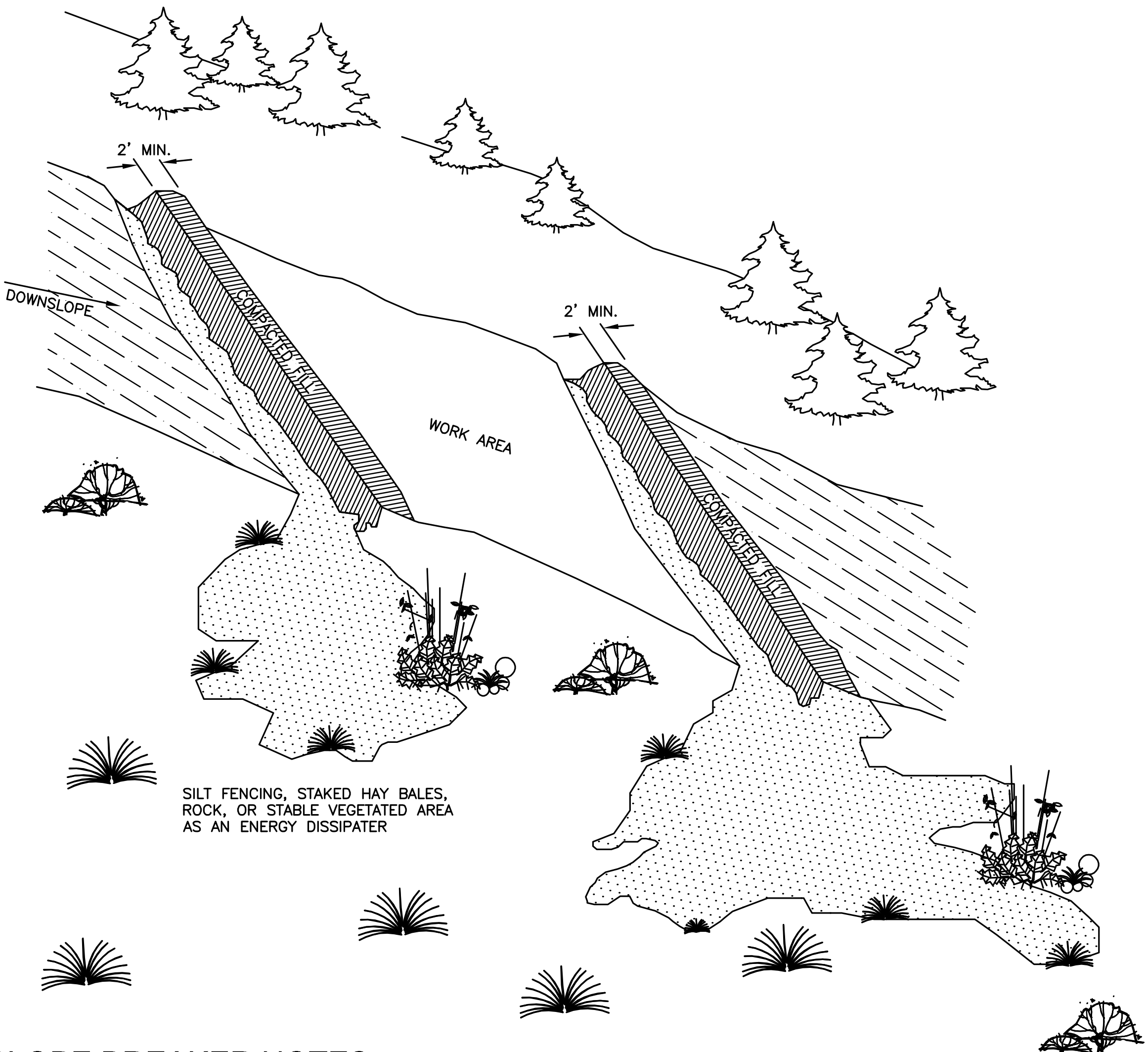
6. AS AN ALTERNATE, AND WHEN APPROVED BY ENGINEER, CONCRETE SLURRY (200PSI CONCRETE) MAY BE USED AS BACKFILL MATERIAL ABOVE THE PIPE.

7. REPLACE SUB–GRADE AND ROAD SURFACE MATERIAL WITH EQUAL OR GREATER THICKNESS AND WITH EQUAL OR GREATER MATERIAL AND SPECIFICATIONS TO PROVIDE A SMOOTH AND CONTINUOUS ROAD SURFACE.

PRELIMINARY

Appendix C-26	File No.:	TYPICAL OPEN-CUT ROAD CROSSING	
		LEACH XPRESS PROJECT	
		DRAWN BY	DATE
		CHECKED BY	SCALE N.T.S.
		APPROVED BY	SHEET 1 of 1
		DWG. NO.	TYPICAL 24

TYPICAL SLOPE BREAKER - TEMPORARY AND PERMANENT



SLOPE BREAKER NOTES:

1. SLOPE BREAKERS SHALL BE CONSTRUCTED OF COMPACTED NATIVE SOIL AND INSTALLED AT LOCATIONS AS SHOWN ON THE CONSTRUCTION DRAWINGS OR AS DIRECTED BY THE ENVIRONMENTAL INSPECTION.
2. SLOPE BREAKER SHALL BE CREATED AS SHOWN OR OTHER PATTERN AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR TO DIRECT THE WATER OFF THE WORK AREA.
3. THE SLOPE BREAKER SHALL BE 18" DEEP (AS MEASURED FROM THE TROUGH TO THE TOP OF THE SLOPE BREAKER) THE TROUGH WILL BE A MINIMUM OF 5' WIDE ACROSS THE WIDTH OF THE WORK AREA.
4. THE OUTLET OF THE SLOPE BREAKER MUST FREELY DISCHARGE ALL RUNOFF OFF THE DISTURBED WORK AREA. INTO A STABLE WELL VEGETATED AREA OR INTO AN ENERGY DISSIPATER.
5. WHERE SLOPE BREAKERS EXTEND BEYOND THE EDGE OF THE CONSTRUCTION WORK AREA TO DIRECT RUNOFF INTO STABLE, WELL VEGETATED AREAS THESE LOCATIONS MUST BE APPROVED BY THE ENVIRONMENTAL INSPECTOR.

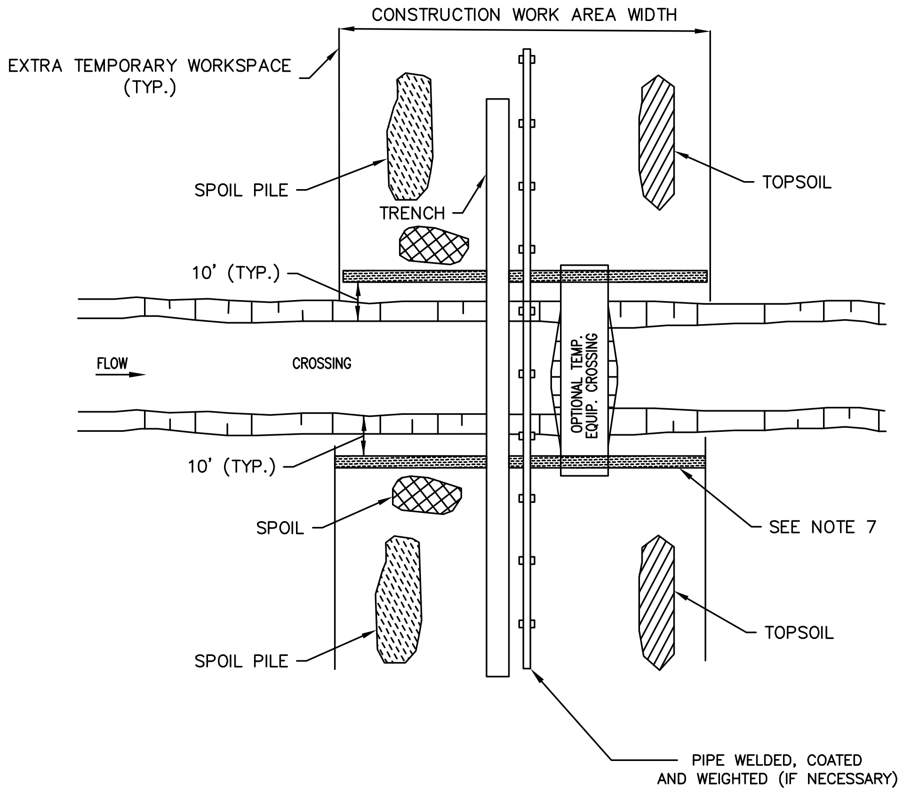
SLOPE (%)	SPACING (FEET)
5–15	300
>15–30	200
>30	100

PRELIMINARY

Appendix C-27

TYPICAL SLOPE BREAKER - TEMPORARY AND PERMANENT			
File No.:	LEACH XPRESS PROJECT		
DRAWN BY	DATE		DWG. NO.
CHECKED BY	SCALE	N.T.S.	TYPICAL 25
APPROVED BY	SHEET	1 of 1	

TYPICAL WATER CROSSING - OPEN CUT NO FLOW



PLAN VIEW
N.T.S.

NOTES:

1. THIS METHOD APPLIES TO CROSSINGS WHERE NO FLOWING WATER IS PRESENT AT THE TIME OF CROSSING.
2. CONTRACTOR MAY MAINLINE TRENCH THROUGH THE CROSSING OR UP TO BOTH SIDES OF THE CROSSING, STRING, WELD, COAT AND WEIGHT (IF NECESSARY). USING THE MAINLINE CREW WITH THE PIPE SKIDDED OVER THE CROSSING.
3. NO REFUELING OF MOBILE EQUIPMENT OR CONCRETE COATING ACTIVITIES WITHIN 100 FEET OF CROSSING
4. IN AGRICULTURAL LAND, STRIP TOPSOIL FROM SPOIL, STORAGE AREA, STOCKPILE TOPSOIL AND SPOIL SEPARATELY, TOPSOIL AND SPOIL WILL NOT BE STOCKPILED IN THE CROSSING CHANNEL AND WILL BE PLACED IN A MINIMUM OF 10 FEET FROM CROSSING BANKS WITHIN THE CONSTRUCTION WORK AREA.
5. RESTORE CROSSING CHANNEL TO PRE–CONSTRUCTION PROFILE AND SUBSTRATE
6. RESTORE CROSSING BANK TO APPROXIMATE ORIGINAL CONDITION AND STABILIZE AS REQUIRED. STABILIZE CROSSING BANKS; INSTALL TEMPORARY SEDIMENT BARRIERS WITHIN 24 HOURS OF COMPLETING THE CROSSING
7. AS DIRECTED BY THE PIPELINE DIRECTOR, EROSION CONTROL MEASURES SHALL BE INSTALLED ACROSS THE WORK AREA FOLLOWING CLEARING AND GRADING AND MAINTAINED UNTIL CONSTRUCTION OF THE CROSSING EROSION CONTROL MEASURES SHALL RE REINSTALLED IMMEDIATELY FOLLOWING BACKFILLING OF TRENCH AND STABILIZATION OF BANKS, BARRIERS MAY BE TEMPORARY REMOVED TO ALLOW CONSTRUCTION ACTIVITIES BUT MUST BE REPLACED AT THE END OF EACH WORK DAY.

PRELIMINARY

TYPICAL WATER CROSSING - OPEN CUT NO FLOW

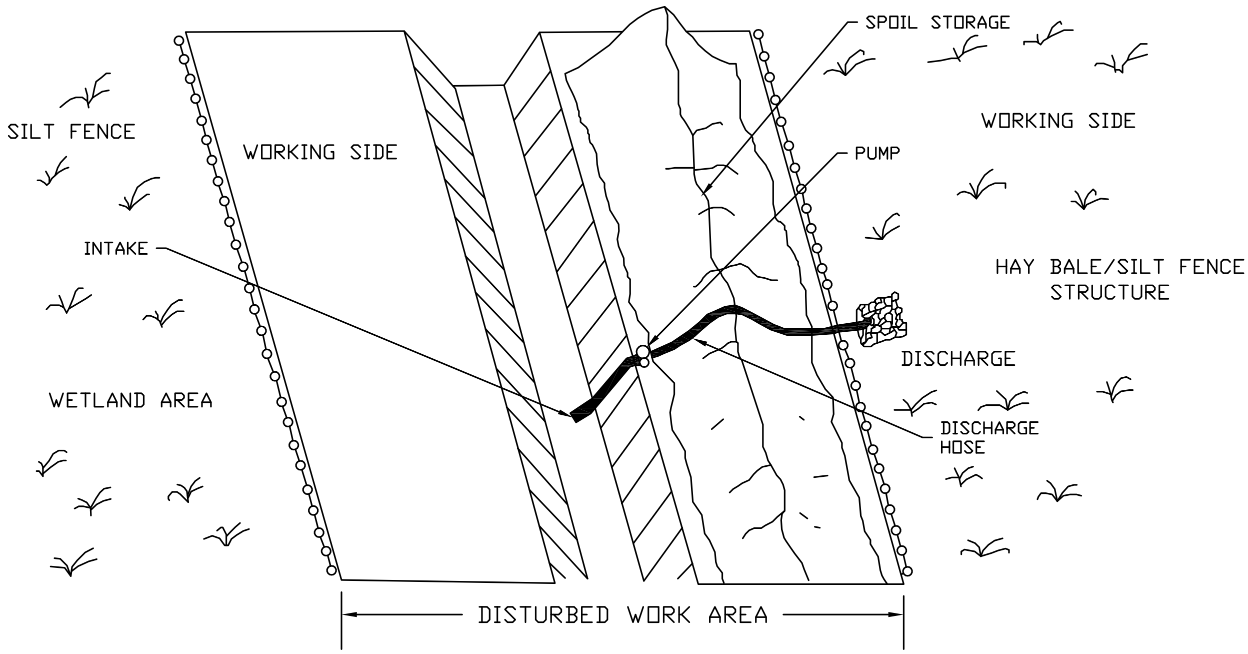
LEACH XPRESS PROJECT

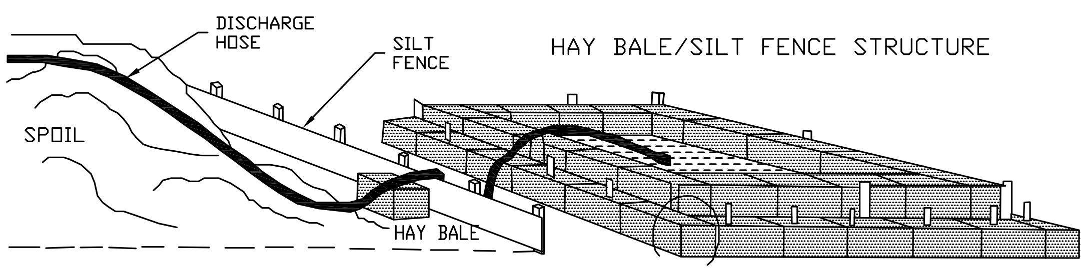
Appendix C-28

File No.:

DRAWN BY	DATE		DWG. NO.	
CHECKED BY	SCALE	N.T.S.	TYPICAL	26
APPROVED BY	SHEET	1 of 1		

EROSION CONTROL AND SEDIMENT FILTRATION MEASURES





PRELIMINARY

Appendix C-29

EROSION CONTROL AND SEDIMENT FILTRATION MEASURES

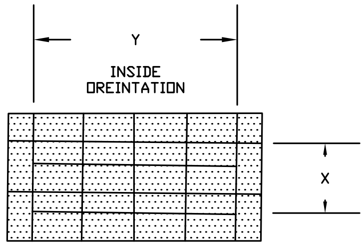
FOR DEWATERING THE PIPELINE TRENCH AN ROADBORES WITHIN WETLANDS AND SPARSELY VEGETATED AREAS - EXHIBIT 1

File No.:

LEACH XPRESS PROJECT

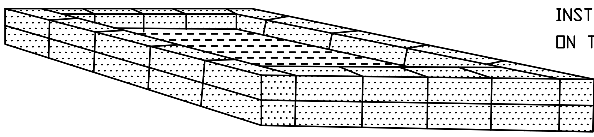
DRAWN BY	DATE	DWG. NO.
CHECKED BY	SCALE N.T.S.	TYPICAL 27
APPROVED BY	SHEET 1 of 1	

EROSION CONTROL AND SEDIMENT FILTRATION MEASURES



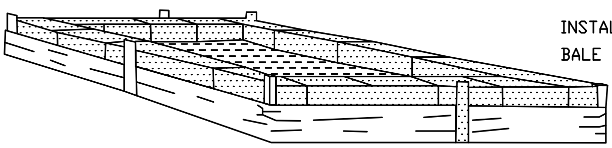
STEP 1

ARRANGE THE STRAW BALES TO THE X AND Y DIMENSIONS (INSIDE) AS SPECIFIED BASED ON THE FLOW RATE OF THE PUMP TO BE USED FOR DEWATERING. ANCHOR STRAW BALES PER TYPICAL 30.



STEP 2

INSTALL ANOTHER LAYER OF STRAW BALES ON THE OUTER EDGE AS SHOWN. DIG IN STARW BALES PER TYPICAL 30.

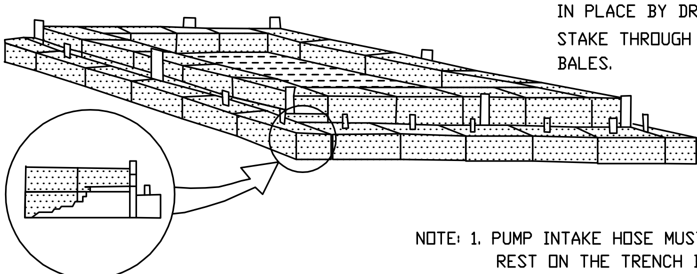


STEP 3

INSTALL SILT FENCE ALL AROUND THE STRAW BALE STRUCTURE AS SHOWN IN TYPICAL 31.

STEP 4

INSTALL ANOTHER LAYER OF STRAW BALES ON THE OUTSIDE OF THE SILT FENCE AND SECURE IN PLACE BY DRIVING A REBAR OR WOODEN STAKE THROUGH EACH OF THE OUTER STRAW BALES.



NOTE: 1. PUMP INTAKE HOSE MUST BE SECURED AND NOT BE ALLOWED TO REST ON THE TRENCH BOTTOM THROUGHOUT DEWATERING. PROVISIONS MUST BE MADE TO ELEVATE THE INLET HOSE TO AT LEAST ONE FOOT ABOVE THE BOTTOM UNTIL BOTTOM DEWATERING IS NECESSARY.

2. WHEN SILT FENCE STAKES CANNOT BE DRIVEN INTO GROUND, LINE THE BOTTOM AND EXTERIOR OF STRAW BALES WITH GEOTEXTILE FABRIC.

PRELIMINARY

Appendix C-30

EROSION CONTROL AND SEDIMENT FILTRATION MEASURES

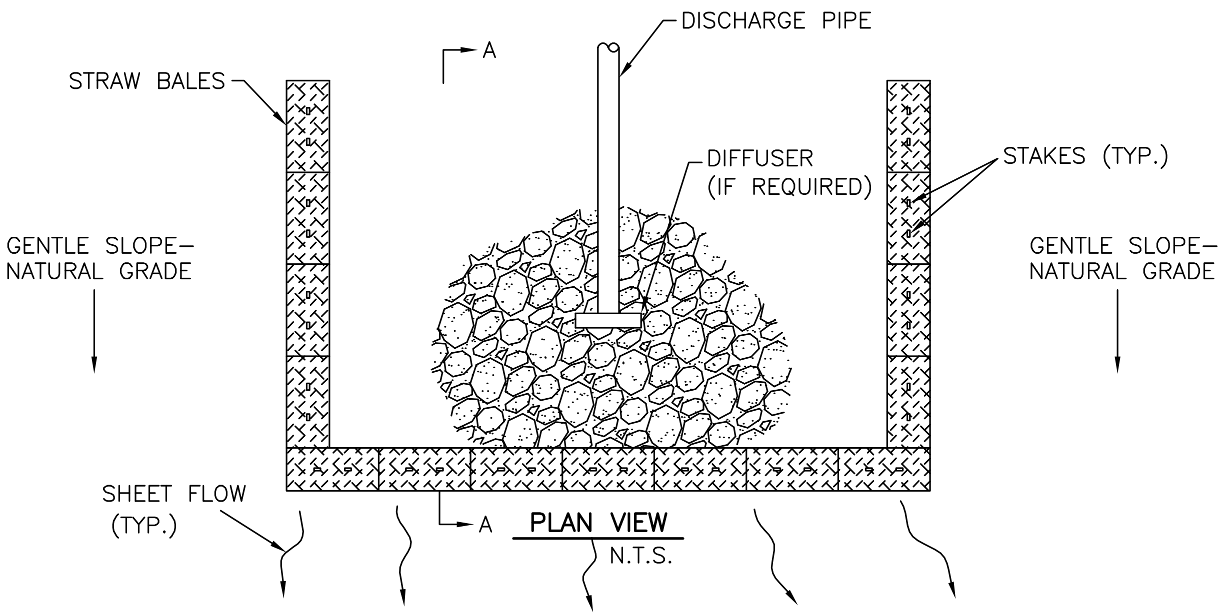
FOR DEWATERING THE PIPELINE TRENCH AN ROADBORES WITHIN WETLANDS AND SPARSELY VEGETATED AREAS - EXHIBIT 2

File No.:

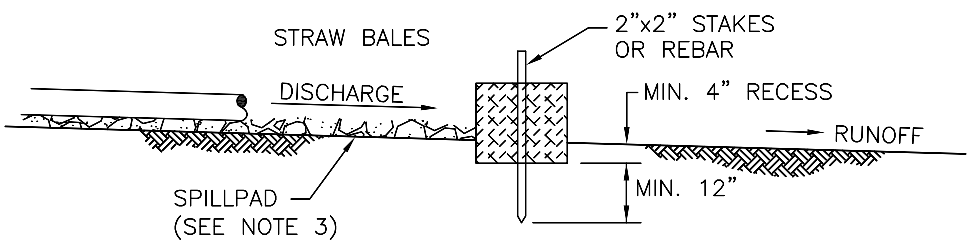
LEACH XPRESS PROJECT

DRAWN BY	DATE	DWG. NO.
CHECKED BY	SCALE N.T.S.	TYPICAL28
APPROVED BY	SHEET 1 of 1	

TYPICAL STRAW BALE DEWATERING STRUCTURE (SMALL VOLUME)



PLAN VIEW
N.T.S.



SECTION A–A
N.T.S.

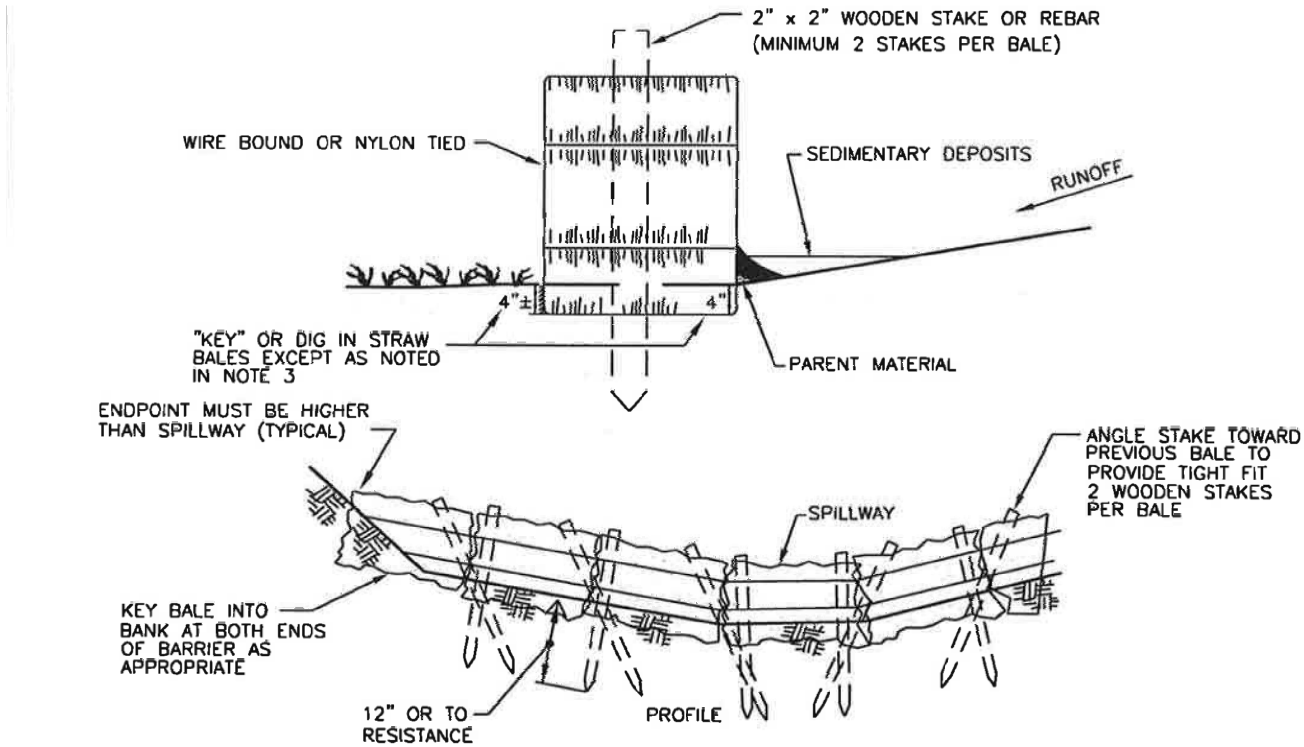
NOTES:

1. INSTALL A STRAW BALE DEWATERING STRUCTURE WHEREVER IT IS NECESSARY AND AS DIRECTED BY THE COMPANY'S INSPECTOR TO PREVENT THE FLOW OF HEAVILY SILT LADEN WATER INTO WATER BODIES OR WETLANDS.
2. DISCHARGE SITE SHALL BE WELL VEGETATED AND THE TOPOGRAPHY OF THE SITE SUCH THAT WATER WILL FLOW INTO THE DEWATERING STRUCTURE AND AWAY FROM ANY WORK AREAS. THE AREA DOWN SLOPE FROM THE DEWATERING SITE MUST BE REASONABLY PLANE OR STABILIZED BY VEGETATION OR OTHER MEANS TO ALLOW THE FILTERED WATER TO CONTINUE AS SHEET FLOW.
3. DIRECT THE PUMPED WATER INTO A STABLE SPILL PAD CONSTRUCTED OF STRAW BALES, ROCK FILL, WEIGHTED TIMBERS OR WOVEN GEOTEXTILE STAKED TO THE GROUND SURFACE (SUCH AS MIRAFI 600X, TERRAFIX 400W) OR A COMPANY APPROVED EQUIVALENT. FORCE THE DISCHARGE WATER BEYOND THE SPILL PAD INTO SHEET FLOW USING STRAW BALES AND NATURAL TOPOGRAPHY. ANCHOR STRAW BALES SECURELY IN PLACE WITH TWO WOODEN STAKES OR REBAR. ENTRENCH ("KEY") STRAW BALES INTO THE GROUND TO A DEPTH OF 4".
4. DISCHARGE RATES SHALL BE SUCH THAT WATER WILL NOT OVERFLOW THE TOP OF THE STRUCTURE.
5. MANUFACTURED FILTER BAGS ARE A SUITABLE ALTERNATIVE TO STRAW BALE STRUCTURES FOR TRENCH DEWATERING. FILTER BAGS SHALL BE INSTALLED AS SPECIFIED BY THE MANUFACTURER. DISPOSE OF FULL FILTER BAGS AT AN APPROVED OFF–SITE FACILITY.
6. INSTALL AN ENERGY DISSIPATOR IF THE DISCHARGE VELOCITY MAY ERODE THE SOIL.

PRELIMINARY

Appendix C-31	TYPICAL STRAW BALE DEWATERING STRUCTURE (SMALL VOLUME)			
	LEACH XPRESS PROJECT			
File No.:	DRAWN BY	DATE		DWG. NO.
	CHECKED BY	SCALE	N.T.S.	TYPICAL 29
	APPROVED BY	SHEET	1 of 1	

STRAW BALE SEDIMENT BARRIER



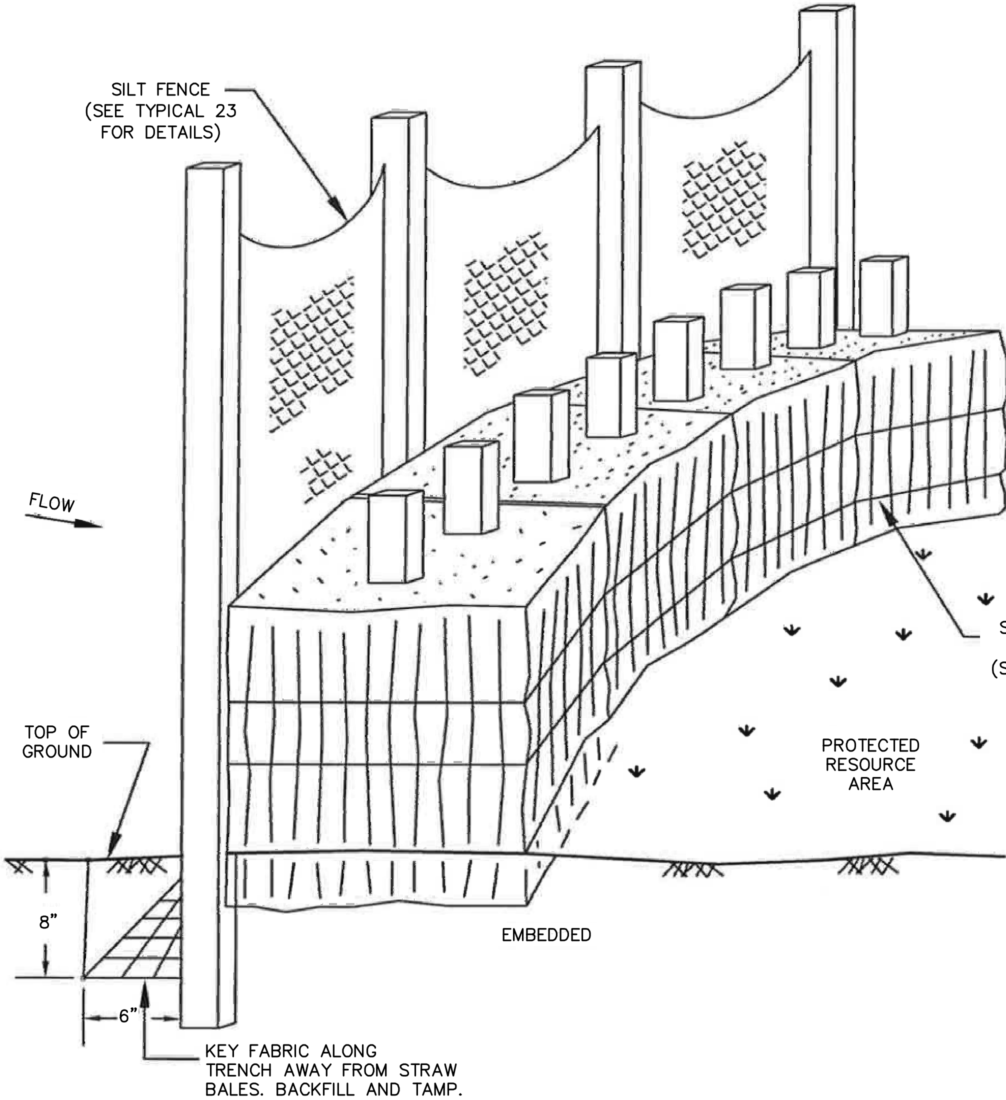
NOTE:

1. STRAW BALE SEDIMENT BARRIERS MAY BE INSTALLED AT THE FOLLOWING LOCATIONS
   - THE BASE OF ALL SLOPES ABOVE ROADS, SPRINGS, WETLANDS, IMPOUNDMENTS AND STREAMS
   - THE DOWNSLOPE EDGE WHERE ANY OF THE ABOVE-MENTIONED LOCATIONS ARE ADJACENT TO
   - THE WORK AREA;
   - BETWEEN TOPSOIL/SPOIL STOCKPILES AND STREAMS OR WETLANDS AS NEEDED:
   - ALONE THE WORK AREA BOUNDARIES IN WETLAND CONSTRUCTION;
   - ACROSS CONSTRUCTION WORK AREA AT ALL WATER BODY CROSSINGS;
   - AS SPECIFIED IN THE SPILL PREVENTION, CONTAINMENT, AND COUNTERMEASURE PLAN;
   - AS DIRECTED BY THE COLUMBIA INSPECTOR
2. STRAW BALE SEDIMENT BARRIERS SHALL CONSIST OF A ROW OF STRAW BALES, PLACED ON THE FIBER-CUT EDGE (TIES NOT IN CONTACT WITH THE GROUND). BALES SHALL BE TIGHTLY ABUTTED TO ONE ANOTHER. THE BARRIER SHALL BE ONE BALE HIGH. ONLY CERTIFIED "NOXIOUS WEED-FREE" STRAW SHALL BE USED WHENEVER POSSIBLE.
3. ENTRENCH ("KEY") STRAW BALES INTO THE GROUND TO A DEPTH OF 4" EXCEPT IN FROZEN, STURATED, OR EXTREMELY ROCKY SOILS. PLACE PARENT MATERIAL ON UPSTREAM SIDE OF STRAW BALES TO PREVENT UNDERMINING.
4. WALK ON STRAW BALES TO INSURE ADEQUATE BALE-TO-SOIL CONTACT.
5. ANCHOR STRAW BALES SECURELY IN PLACE WITH TWO WOODEN OR STEEL REBAR STAKES DRIVEN THROUGH THE TOPS OF THE BALE. THE STAKES SHALL PENETRATE THE GROUND AT A DISTANCE OF 12" UNLESS ROCK OR AN IMPERMEABLE LAYER IS ENCOUNTERED:
   - THE FIRST, CENTER AND END BALES OF THE BARRIER SHALL HAVE STAKES DRIVEN
   - VERTICALLY THROUGH THE BALE;
   - BALES, OTHER THAN THOSE LOCATED AT THE ENDS OR CENTER OF THE BARRIER, SHALL HAVE THE
   - FIRST STAKE DRIVEN THROUGH THE TIP OF THE BALE AT AN ANGLE SO THAT THE STAKE PASSES
   - THROUGH THE PREVIOUS PLACED BALE IN ORDER TO PROVIDE TIGHT CONTACT BETWEEN BALES. THE
   - SECOND STAKE SHALL BE DRIVEN VERTICALLY THROUGH THE TOP OF THE BALE.
6. TIES TO BE IN HORIZONTAL POSITION.

PRELIMINARY

Appendix C-32	STRAW BALE SEDIMENT BARRIER			
File No.:	LEACH XPRESS PROJECT			
	DRAWN BY	DATE		DWG. NO.
	CHECKED BY	SCALE	N.T.S.	TYPICAL 30
	APPROVED BY	SHEET	1 of 1	

TYPICAL STRAW BALE AND SILT FENCE



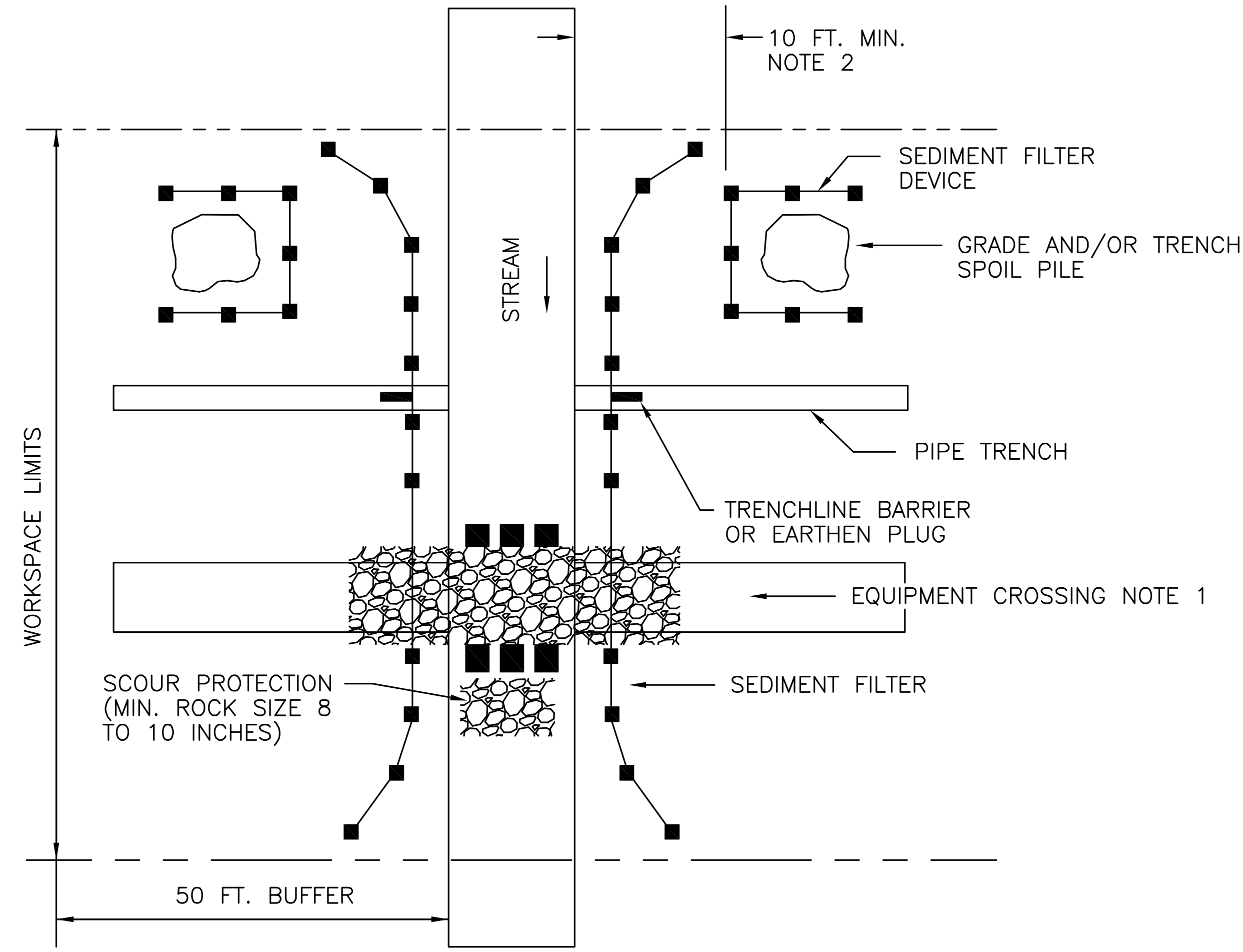
NOTE:

1. WHERE EXTREMELY ERODIBLE SOIL CONDITIONS EXIST AND AT THE DIRECTION OF THE INSPECTOR. A COMBINED STRAW BALE AND SILT FENCE SEDIMENT CONTROL BARRIER SHALL BE INSTALLED. FOR INSTALLATION CONDITIONS AND INSTRUCTIONS SEE: TYPICAL 23 AND TYPICAL 30

PRELIMINARY

Appendix C-33	TYPICAL STRAW BALE AND SILT FENCE		
File No.:	LEACH XPRESS PROJECT		
DRAWN BY	DATE		DWG. NO.
CHECKED BY	SCALE	N.T.S.	TYPICAL 31
APPROVED BY	SHEET	1 of 1	

TYPICAL WATER CROSSING - OPEN CUT WITH FLOW



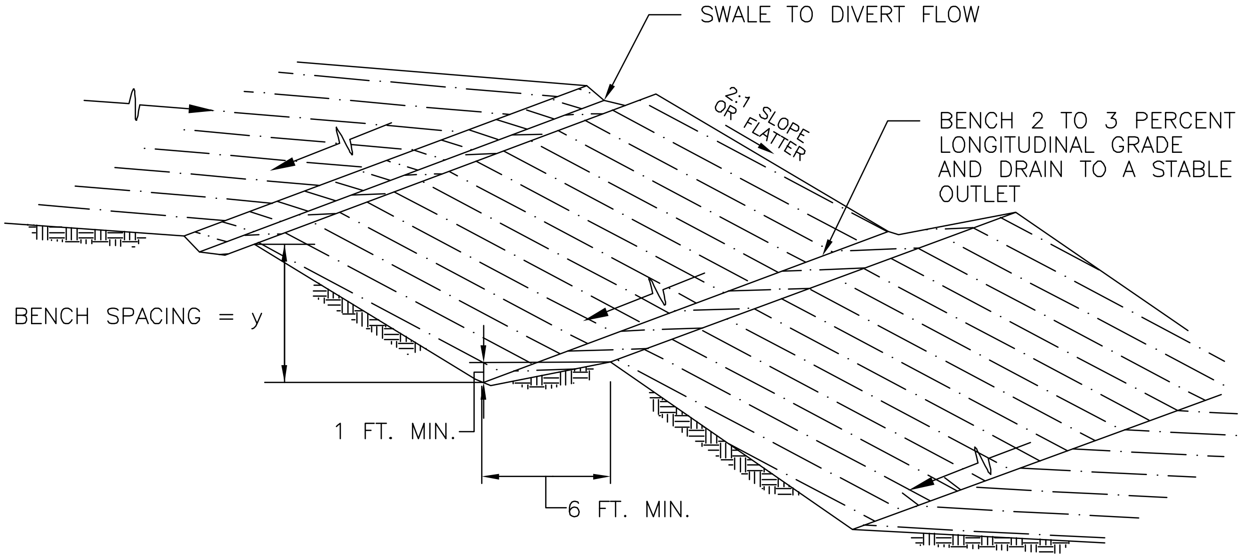
NOTES:

1. EQUIPMENT CROSSINGS ARE TO BE PREPARED AS ILLUSTRATED IN TYPICAL 20.
2. GRADE AND TRENCH SPOIL WILL BE STOCKPILED AT LEAST 10 FEET FROM THE WATERS' EDGE.

PRELIMINARY

Appendix C-34	TYPICAL WATER CROSSING - OPEN CUT WITH FLOW			
File No.:	LEACH XPRESS PROJECT			
	DRAWN BY	DATE		DWG. NO.
	CHECKED BY	SCALE	N.T.S.	TYPICAL 32
	APPROVED BY	SHEET	1 of 1	

TYPICAL BENCHING



SLOPE	y (MAX.)
2:1	20 FT
3:1	30 FT
4:1	40 FT

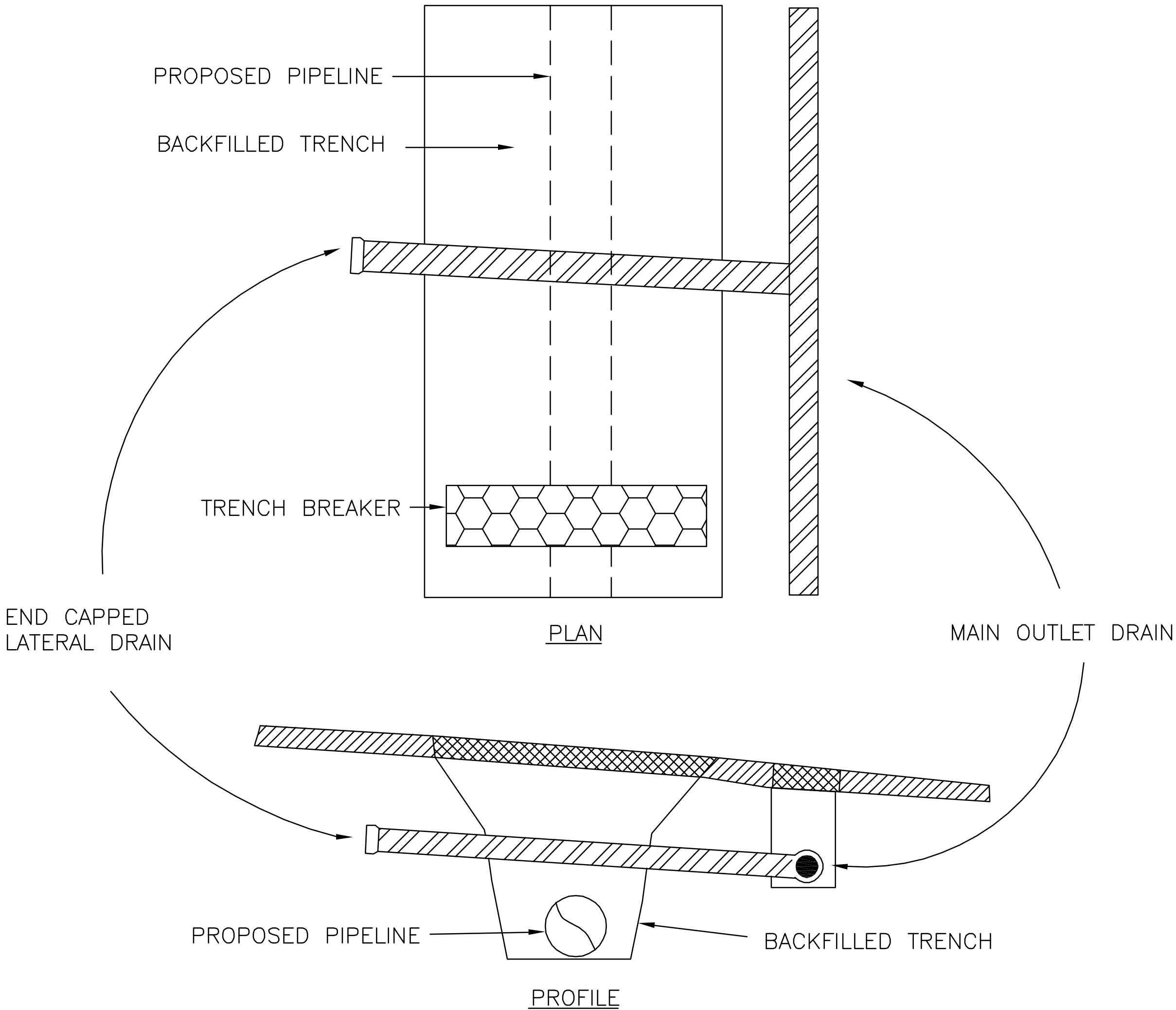
CONSTRUCTION SPECIFICATIONS:

1. USE FILL MATERIAL FREE OF BRUSH, RUBBISH, ROCKS, LOGS, STUMPS, BUILDING DEBRIS, AND OTHER OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS.
2. DO NOT INCORPORATE FROZEN, SOFT, MUCKY, OR HIGHLY COMPRESSIBLE MATERIALS INTO FILL SLOPES OR STRUCTURAL FILLS. DO NOT PLACE FILL ON A FROZEN FOUNDATION.
3. PLACE ALL FILL IN LOOSE LIFTS NOT TO EXCEED 8 INCHES AND THEN COMPACT.
4. COMPACT ALL FILLS AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, OR OTHER RELATED PROBLEMS. COMPACT FILL INTENDED TO SUPPORT STRUCTURES, CONDUITS, ETC., IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES.

PRELIMINARY

Appendix C-35	TYPICAL BENCHING		
File No.:	LEACH XPRESS PROJECT		
DRAWN BY	DATE		DWG. NO.
CHECKED BY	SCALE	N.T.S.	TYPICAL 33
APPROVED BY	SHEET	1 of 1	

TYPICAL FRENCH DRAIN
(INTERCEPT DRAIN CROSS-TRENCH)



NOTES:

1. TRENCH BREAKERS PREVENT GULLY EROSION WHILE THE TRENCH IS OPEN AND HELP TO INHIBIT WATER PIPING ALONG THE PIPELINE AFTER BACKFILLING.
2. INTERCEPT DRAINS RECEIVE SOIL MOISTURE DRAINING NATURALLY FROM THE UNDISTURBED SOIL PROFILE INTO THE DISTURBED BACKFILL SOIL WITHIN THE TRENCH. THE INTERCEPT DRAIN LINES HELP PREVENT SATURATED SOIL CONDITIONS ALONG THE PIPELINE.
3. INSTALL INTERCEPTOR DRAINS AT INTERVALS AS NEEDED TO REDUCE DRAINAGE THROUGH TRENCH BACKFILL.
4. USE FILL MATERIAL FREE OF BRUSH, RUBBISH, ROCKS, LOGS, STUMPS, BUILDING DEBRIS, AND OTHER OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS.

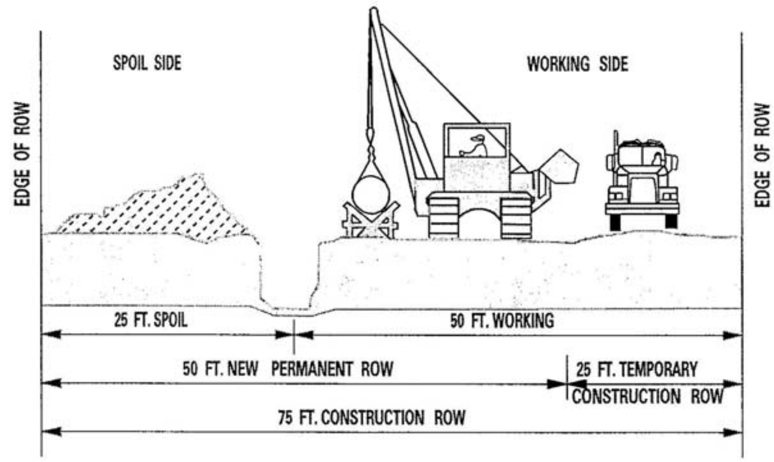
PRELIMINARY

TYPICAL FRENCH DRAIN
(INTERCEPT DRAIN CROSS-TRENCH)

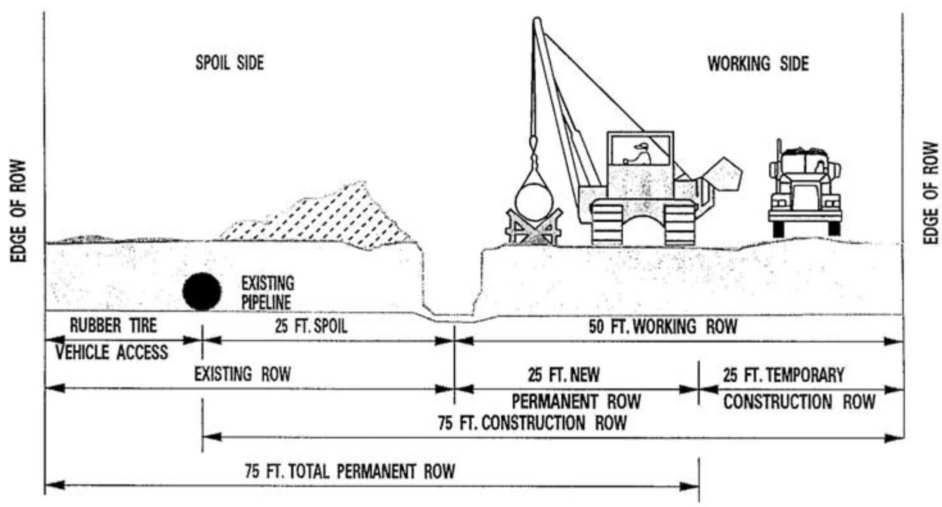
LEACH XPRESS PROJECT

File No.:

DRAWN BY	DATE		DWG. NO.
CHECKED BY	SCALE	N.T.S.	TYPICAL 34
APPROVED BY	SHEET	1 of 1	



NEW ROW

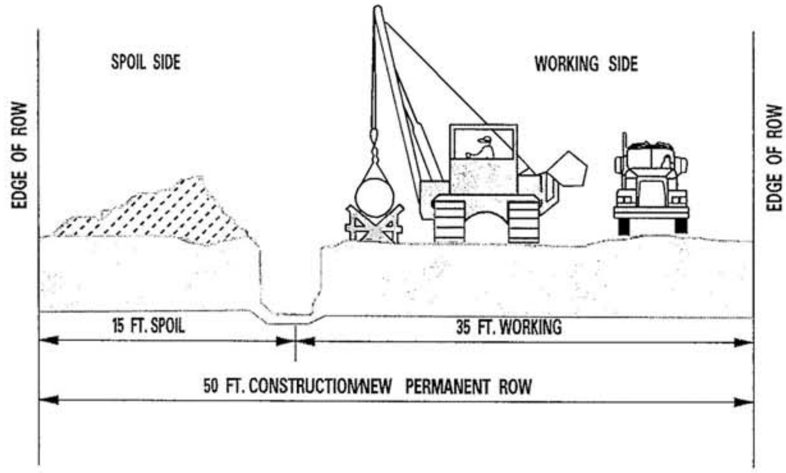


PARALLEL TO EXISTING ROW

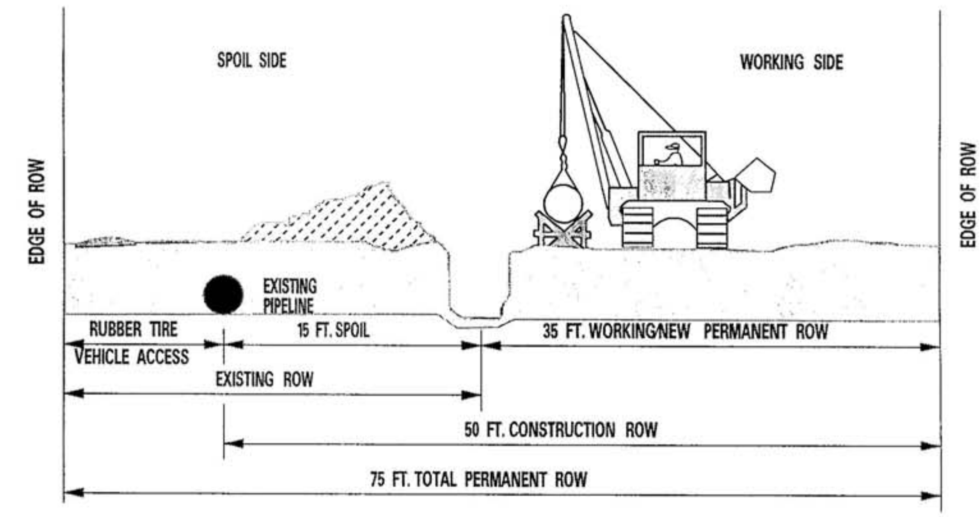
NOTES:
1. USE FOR 14-INCH OR GREATER DIAMETER PIPELINE.
2. THE DIMENSIONS SHOWN ON THIS FIGURE ARE TYPICAL.
3. VARIATIONS FOR STAGING AREAS MAY BE NECESSARY DUE TO SITE-SPECIFIC TERRAIN FEATURES; HOWEVER, UNLESS OTHERWISE INDICATED IN COLUMBIA'S ENVIRONMENTAL MANAGEMENT & CONSTRUCTION PLANS, THE MAXIMUM WIDTH OF CONSTRUCTION ROW WILL BE 75 FEET.

NOT TO SCALE

Appendix C-37	**TYPICAL 75 FT. CONSTRUCTION RIGHT-OF-WAY**	



NEW ROW



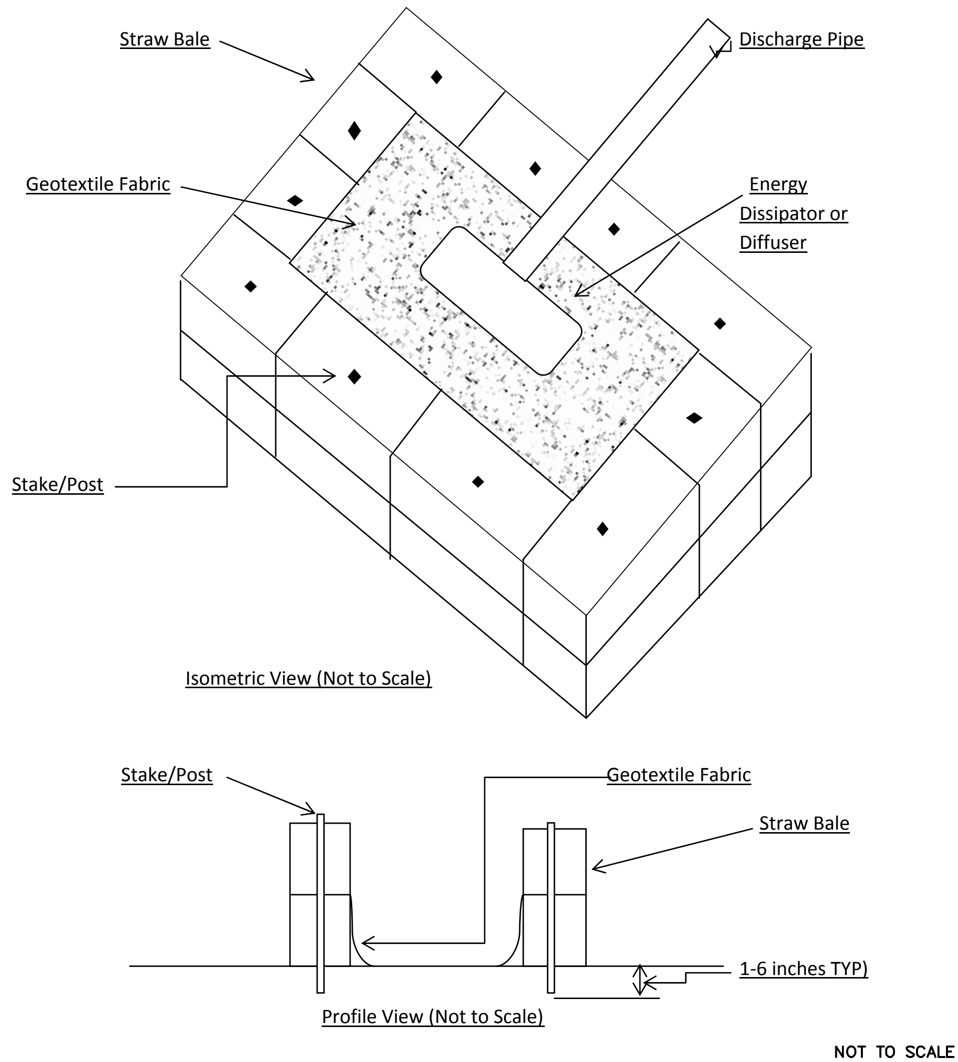
PARALLEL TO EXISTING ROW

NOTES:
1. USE FOR 12-INCH OR LESS DIAMETER PIPELINE.
2. THE DIMENSIONS SHOWN ON THIS FIGURE ARE TYPICAL.
3. VARIATIONS FOR STAGING AREAS MAY BE NECESSARY DUE TO SITE-SPECIFIC TERRAIN FEATURES; HOWEVER, UNLESS OTHERWISE INDICATED IN COLUMBIA'S ENVIRONMENTAL MANAGEMENT & CONSTRUCTION PLANS, THE MAXIMUM WIDTH OF CONSTRUCTION ROW WILL BE 50 FEET.

NOT TO SCALE

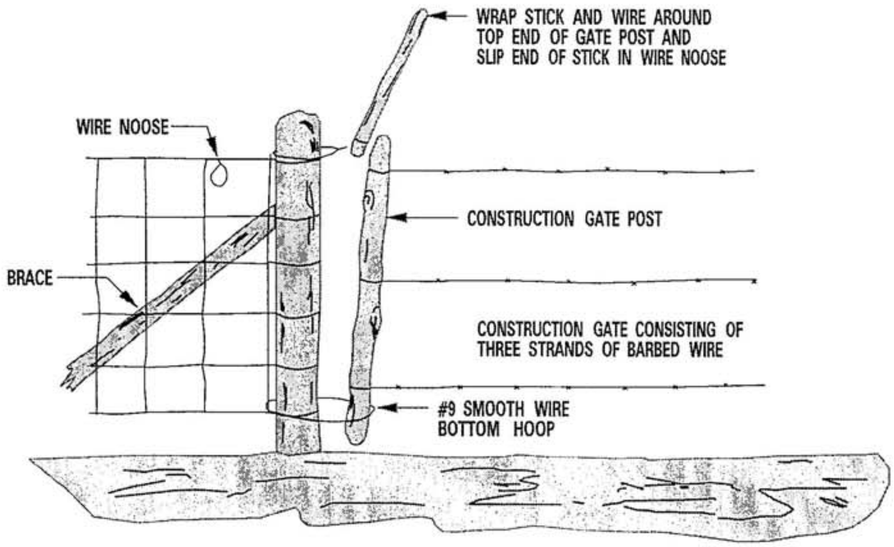
Appendix C-38

TYPICAL 50 FT. CONSTRUCTION RIGHT-OF-WAY

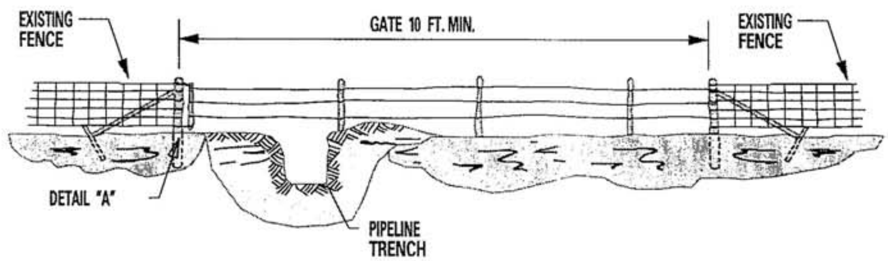


Appendix C-39

Hydrostatic Test Dewatering Pit



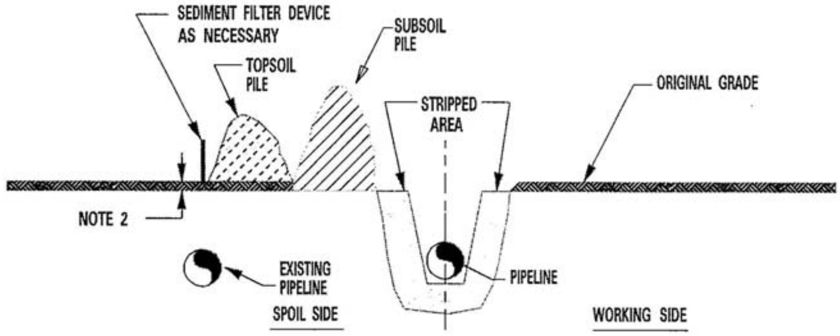
DETAIL "A"



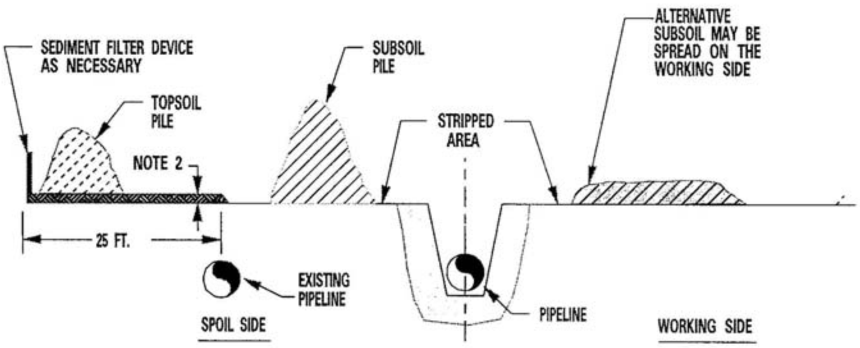
NOTES:
1. IF EXISTING FENCE POSTS ARE STEEL "T" BAR TYPE, THEN REMOVE THE STEEL "T" BAR POST ON BOTH SIDES OF THE GATE OPENING AND REPLACE WITH TEMPORARY WOODEN POSTS, BRACED AS SHOWN.
2. SUITABLE SUBSTITUTES FOR THE STICK AND WIRE GATE FASTENER ARE PERMISSIBLE.

NOT TO SCALE

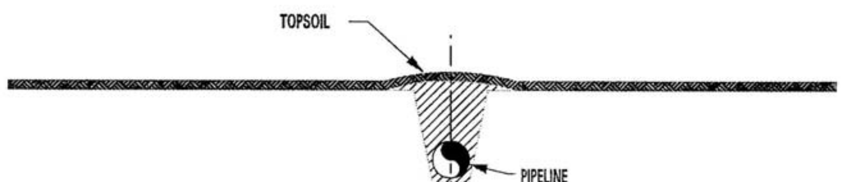
Appendix C-40	**TEMPORARY CONSTRUCTION GATE**	



TRENCHLINE AND SPOIL SIDE METHOD



ENTIRE CONSTRUCTION ROW METHOD



REPLACED

NOTES:
1. OTHER CONFIGURATIONS OF TOPSOIL AND SUBSOIL ARE ACCEPTABLE PROVIDED THEY ARE KEPT SEPARATE.
2. UP TO 12 INCHES OF TOPSOIL REMOVED.
3. TOPSOIL AND SUBSOIL PILES WILL BE ADEQUATELY PROTECTED FROM EROSION AND SEDIMENTATION BY USE OF SEDIMENT FILTER DEVICES OR MULCH.

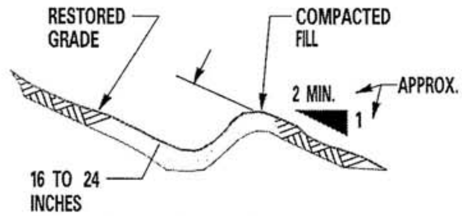
NOT TO SCALE

Appendix C-41	TYPICAL TOPSOIL CONSERVATION	

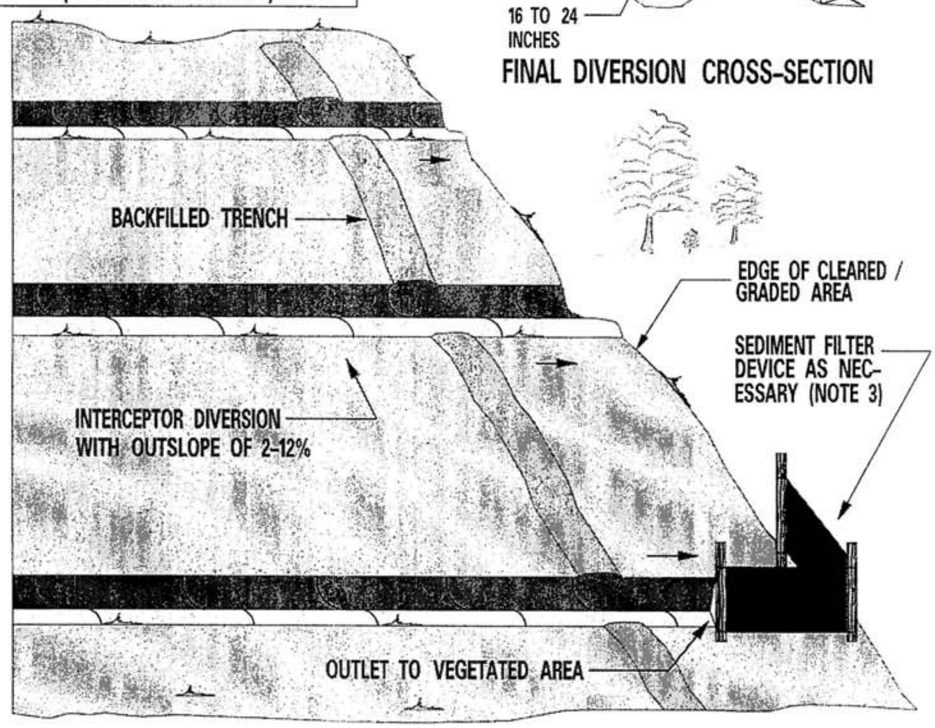
NOTE 1

SLOPE	SPACING
< 5%	NONE
5–15%	300 FEET
15–30%	200 FEET
>30+%	100 FEET

INTERCEPTOR SPACING
(MINIMUM REQUIRED)



FINAL DIVERSION CROSS-SECTION



NOTES:

1. SPACING USED FOR BOTH TEMPORARY AND FINAL INTERCEPTOR DIVERSIONS.
2. TEMPORARY INTERCEPTOR DIVERSIONS WILL BE MAINTAINED DURING THE CONSTRUCTION PHASE UNTIL FINAL INTERCEPTOR DIVERSIONS ARE INSTALLED.
3. IF EXISTING GROUND COVER IS SPARSE, SECURE SEDIMENT FILTER DEVICE IN OUTLET.
4. THE DIVERSION MAY BE EXTENDED UP TO 5 FEET OFF THE ROW, IF NECESSARY, TO PROVIDE AN ADEQUATE OUTLET.
5. DIVERSION OUTLETS WILL ALTERNATE FROM SIDE TO SIDE WHENEVER POSSIBLE.

NOT TO SCALE

INTERCEPTOR DIVERSIONS / SLOPE BREAKERS

INTERCEPTOR DIVERSIONS /SLOPE BREAKERS

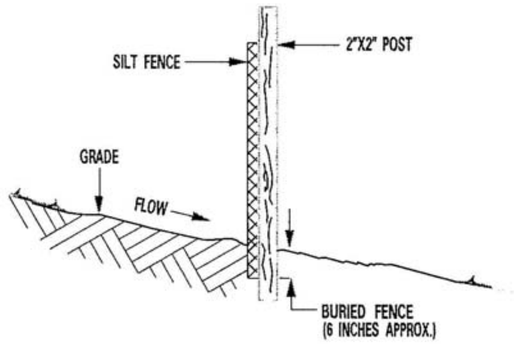
Interceptor diversions are the most common and effective device used for erosion control on construction ROW. During construction, temporary diversions are installed to control water on the graded ROW. During restoration final diversions are installed to protect the ROW from erosion until the vegetation reestablishes on the disturbed areas.

Temporary diversions are generally made by building a curb 8 to 14 inches high across the ROW. The curbs are shaped to allow passage of construction equipment and inspector vehicles. The diversion should have a gradient of 2%– 12%, and must drain either into the trench or off the ROW. Where water is directed off the ROW, the outlet will be protected by a sediment filter device or heavy vegetation. Temporary diversions may be broken down by construction equipment during the workday, but will be restored by the end of each day. Temporary diversions will be spaced along the ROW in accordance with Figure 6A. The actual number of temporary diversions may vary from that of final diversions because the construction ROW's artificial grade may reduce the slope. Temporary diverisons may be conctructed out of silt fence, staked hay or straw bales or sand bags with the Environmental Inspectors approval. Position the outfall of each temporary slope breaker to prevent sediment discharge into wetland, waterbodies, or other sensitive areas.

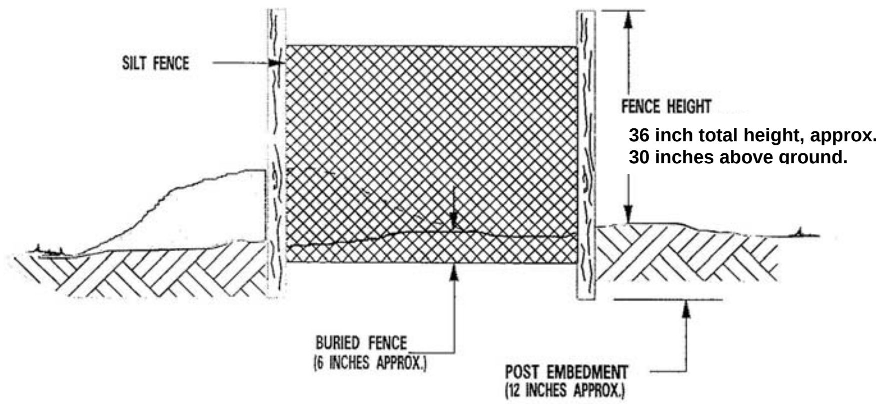
Final diversions typically consist of a curb 16 to 24 inches high below a shallow swale. The curb is constructed of compacted earth fill with side slopes of 2:1 or flatter to allow passage of maintenance equipment. The diversions should extend across the entire ROW and drain water with a 2% to 12% gradient. The outlets of final diversions are stabilized with sediment filter devices, rock, brush, or heavy vegetation. Final diversions will be spaced along the ROW in accordance with Figure 6A (or as shown on the Environmental Construction Drawings), and will tie into existing diversions where present. In places where final grade creates side slopes or slopes which break in more than one direction, diversion installation may need to vary to create an outslope of 2% to 12% which will carry water off the ROW.

Alternative diversion construction may be used in areas where an earthen diversion is impractical. In these instances, temporary diversions may be constructed with sediment filter devices as noted above.

Appendix C-43	**INTERCEPTOR DIVERSIONS**	



SIDE VIEW



FRONT VIEW

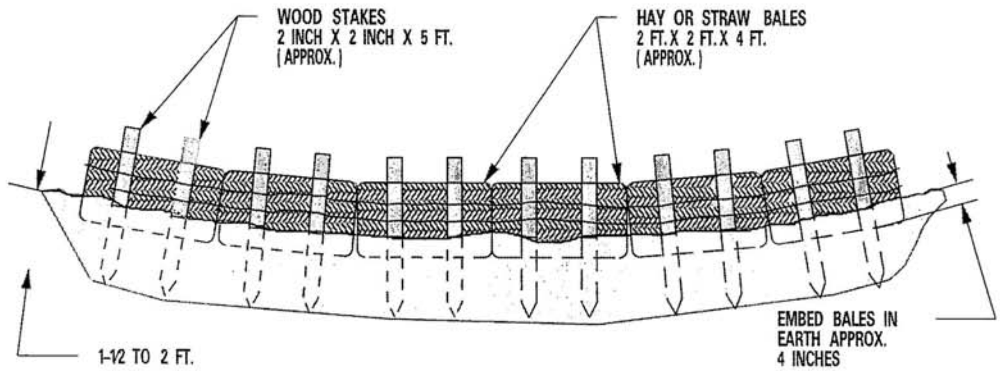
NOTE: SILT FENCE CAN ALSO BE INSTALLED (USING THE SAME SPECIFICATIONS AS PRESENTED ABOVE) IN OTHER SITUATIONS FOR EROSION AND SEDIMENTATION CONTROL.

SEDIMENT FILTER DEVICE SILT FENCING

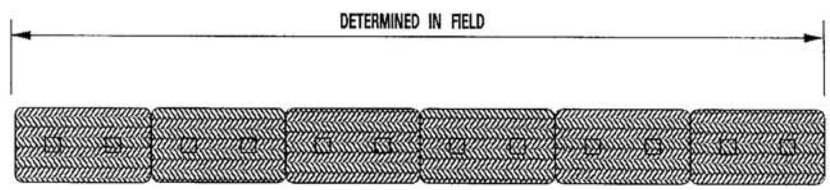
Stakes should be spaced 8 feet apart.

NOT TO SCALE

Appendix C-44	SEDIMENT FILTER DEVICE SILT FENCING	



SIDE VIEW



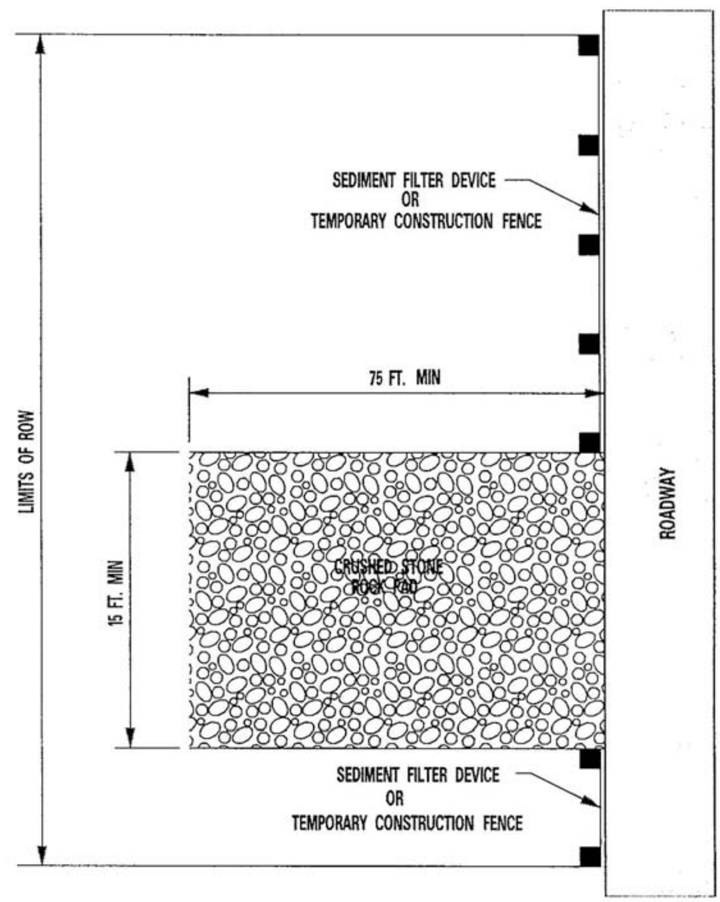
TOP VIEW

NOTES:

1. IF BALES ARE TO BE PLACED ON TOP OF HEAVY VEGITATION, EMBEDDING THE BALES MAY NOT BE NECESSARY.
2. REBAR (3/8" TO 3/4" DIAMETER) CAN BE SUBSTITUTED FOR WOOD STAKES.

NOT TO SCALE

SEDIMENT FILTER
DEVICE
STAKED BALES

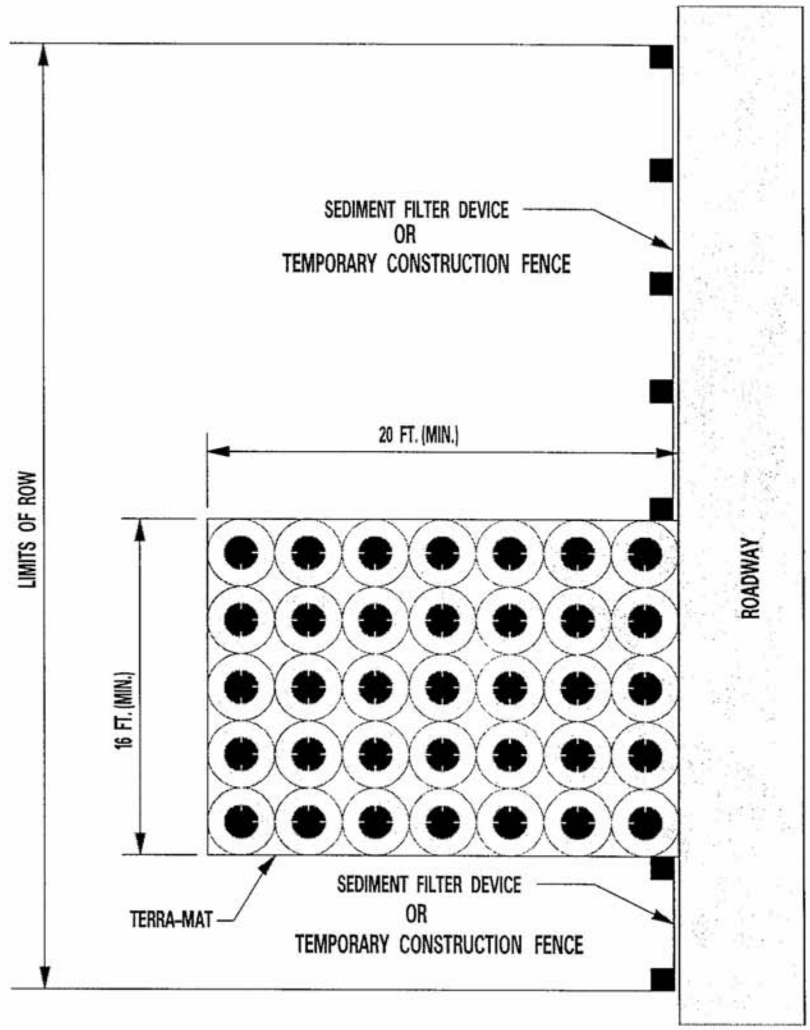


NOTES:

1. CRUSHED STONE SIZE WILL BE AASHTO NUMBER 1 COARSE AGGREGATE OR EQUIV. (4 INCH DIAMETER MINIMUM.)
2. ROCK PAD WILL BE AT LEAST 6 INCHES THICK.
3. THE ROAD ENTRANCE SHOULD HAVE A GEOTEXTILE FABRIC BENEATH THE ROCK PAD. (SEE SECTION II.E)
4. IF ROCK PAD BECOMES COVERED WITH MUD SO AS TO BECOME INEFFECTIVE, ADDITIONAL STONE WILL BE ADDED.
5. ALL STONE AND FABRIC MUST BE REMOVED DURING ROW RESTORATION.
6. THE ROCK PAD MAY BE ENLARGED TO INCLUDE A TURNING RADIUS.

NOT TO SCALE

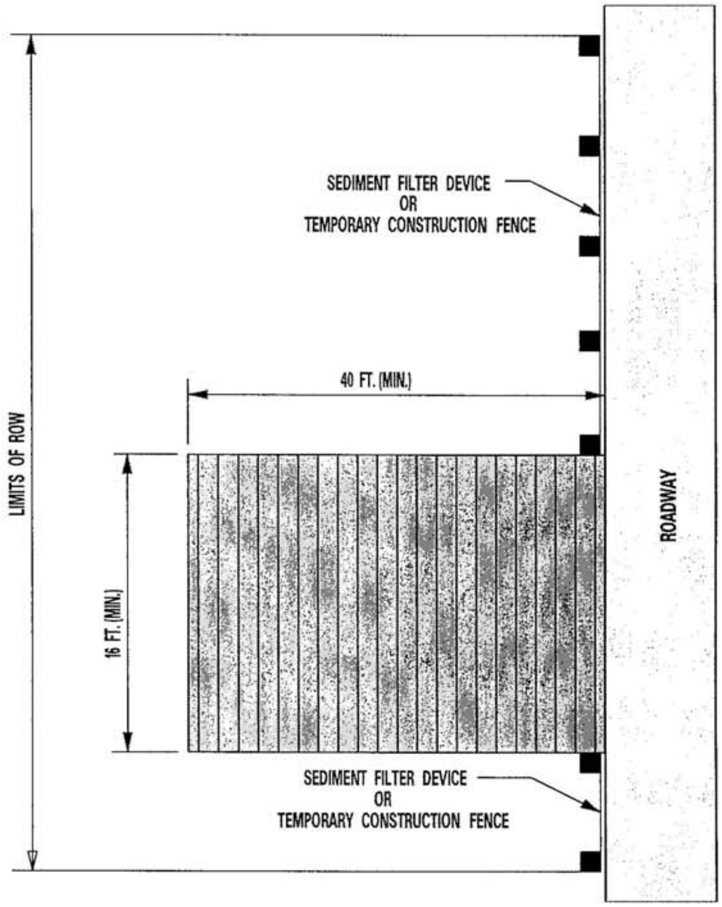
Appendix C-46	**TEMPORARY ROAD ENTRANCE ROCK PADS**	



NOTES:
1. TERRA-MATS ARE CONSTRUCTED BY OVERLAPPING TIRES AND INTERCONNECTED CABLE.
2. TERRA-MATS WILL BE UNDERLAIN WITH GEOTEXTILE FABRIC.
3. TERRA-MATS SHOULD BE MAINTAINED SO AS NOT TO ALLOW EXCESS MUD TO ACCUMULATE.

NOT TO SCALE

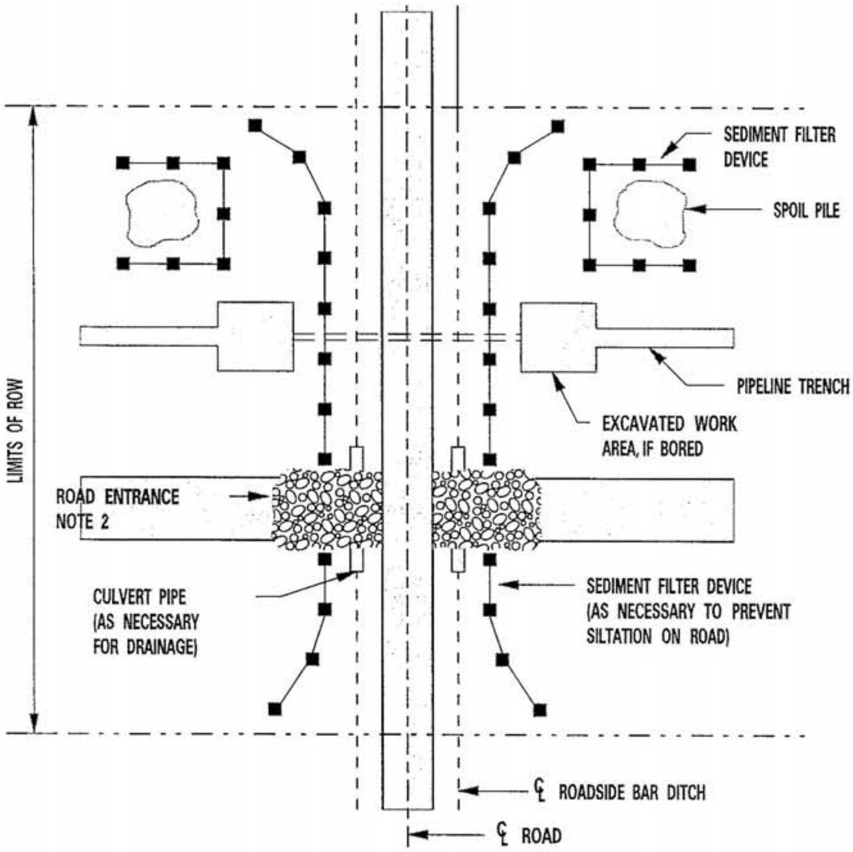
Appendix C-47	TEMPORARY ROAD ENTRANCE TERRA-MATS	



NOTES:
1. BOARD ROADS TO BE USED IN WETLANDS AND ROADWAY ENTRANCES FOR TEMPORARY ACCESS ROADS.
2. BOARD ROADS ARE CONSTRUCTED BY LAYERING A BASE OF THE INTERLOCKING MATS PARALLEL TO THE ROAD IN A STAGGERED MANNER. OTHER METHODS OF BOARD ROAD CONSTRUCTION MAY BE USED IF APPROVED BY THE EM & CP PREPARER.
3. BOARD ROADS WILL BE UNDERLAIN WITH GEOTEXTILE FABRIC.

NOT TO SCALE

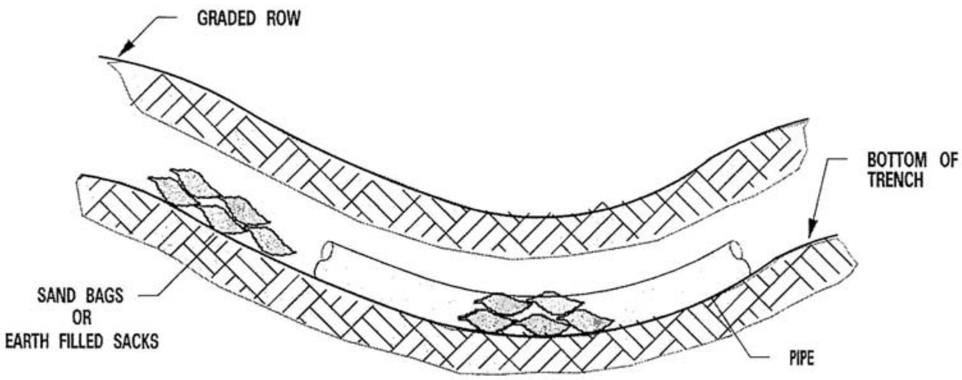
Appendix C-48	**TEMPORARY ROAD ENTRANCE BOARD ROAD**



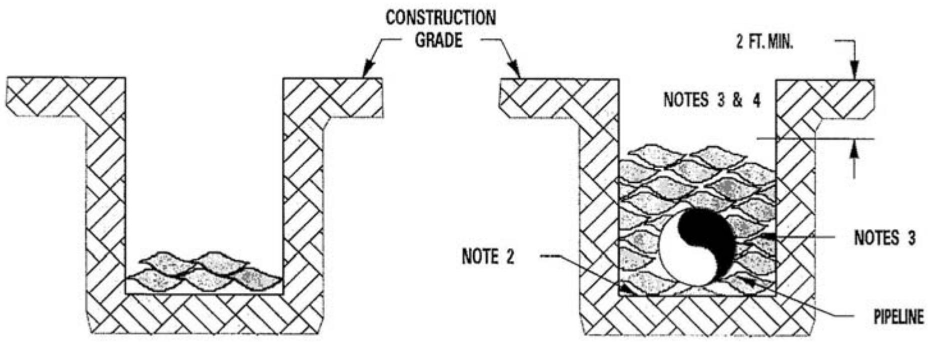
NOTES:
1. SIMILAR PROCEDURES WILL BE USED AT RAILROAD CROSSINGS.
2. REFER TO FIGURES 9, 10, AND 11 FOR TYPES OF ROAD ENTRANCES.

NOT TO SCALE

Appendix C-49	TYPICAL EROSION CONTROL MEASURES AT ROAD CROSSINGS	



SIDE VIEW



BEFORE PIPE INSTALLATION

BREAKER

AFTER PIPE INSTALLATION

BARRIER

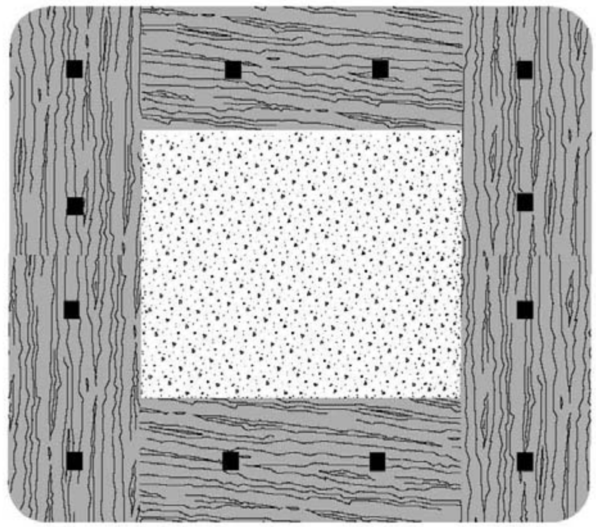
FRONT VIEW

NOTES:

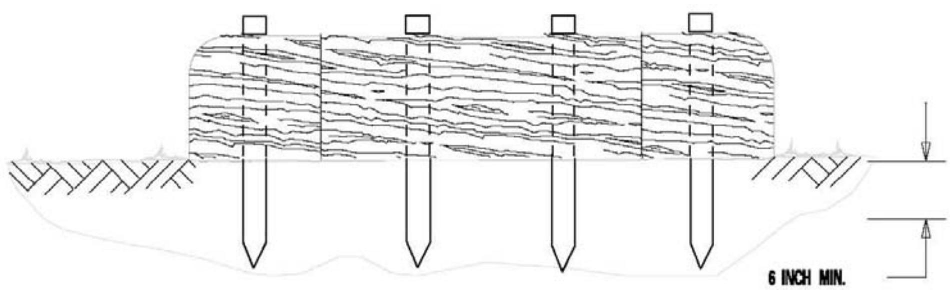
1. INSTALL AT EVERY SECOND INTERCEPTOR DIVERSION PROMPTLY AS TRENCH IS COMPLETED. (SEE FIGURE 6A)
2. PRIOR TO LOWERING IN, REMOVE ALL DECOMPOSED MATERIAL AND ROCKS.
3. INSTALL SACKS TO TOP OF TRENCH ON STEEP GRADES THAT ARE NOT USED FOR FARMING.
4. TOP OF TRENCHLINE BARRIER WILL BE BELOW PLOW DEPTH IN AGRICULTURAL LAND.
5. DOUBLE STAKED HAY /STRAW BALES MAY BE SUBSTITUTED FOR SAND BAGS (EARTH FILLED SACKS) AS TEMPORARY BREAKERS WHERE APPROPRIATE.

NOT TO SCALE

TRENCHLINE BARRIERS AND BREAKERS



PLAN VIEW



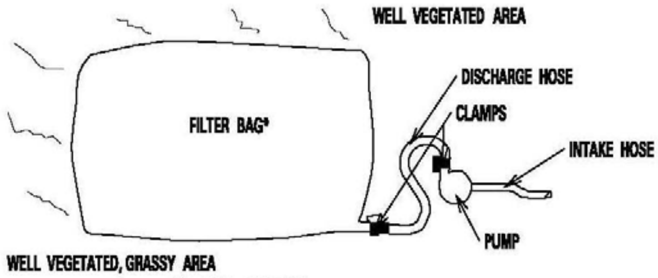
SIDE VIEW

NOTES:

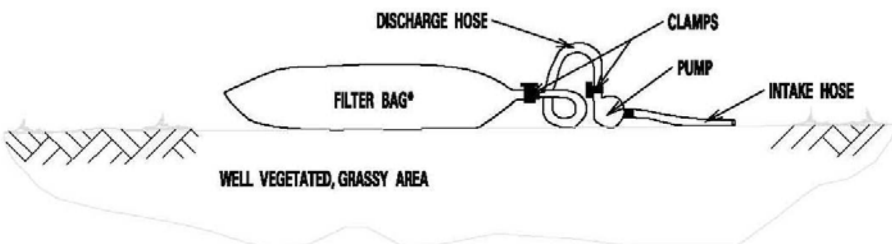
1. INSTALL BALES AS SHOWN. IF ADDITIONAL STORAGE VOLUME IS NECESSARY, SECURE ADDITIONAL BALES ON TOP OF INITIAL BOTTOM LAYER AND/OR BY INCREASING THE NUMBER BALES IN BOTTOM LAYER.
2. SECURE EACH BALE & EACH LAYER OF BALES USING EITHER TWO REBARS OR TWO WOODEN STAKES PER BALE.
3. PLACE A 5 TO 6 INCH DEEP LAYER OF 3/4 TO 1.0 INCH CLEAN STONE OR STRAW ON GROUND INSIDE BALES.
4. THE SEDIMENT TRAP WILL NOT BE GREATER THAN TWO BALES IN HEIGHT FOR SIX-BALE BOTTOM CONSTRUCTION WITHOUT ADDITIONAL REINFORCEMENT OF TRAP WALLS.
5. A FILTER BAG MAY ALSO BE UTILIZED INSIDE THE TRAP TO HELP FILTER THE DISCHARGE.

NOT TO SCALE

	SEDIMENT TRAP	



PLAN VIEW

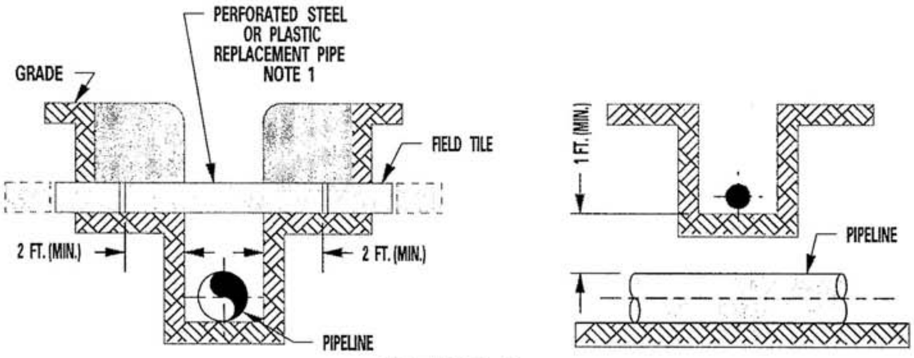


SIDE VIEW

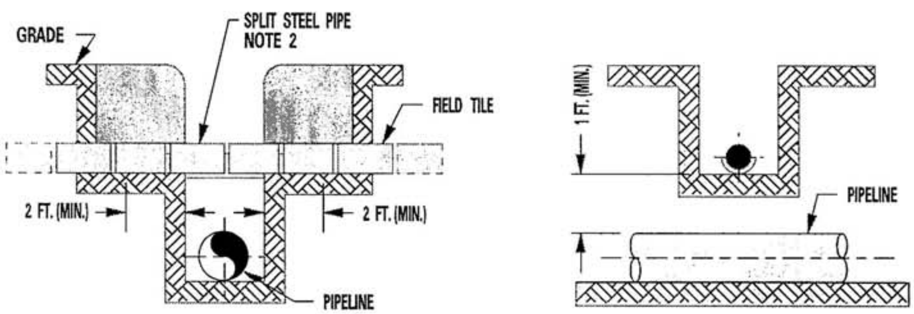
NOTES:
1. FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS.
2. BAGS MUST BE PLACED WITHIN THE PERMITTED AREA IF ACCESSING THE BAG WITH MACHINERY IS REQUIRED FOR DISPOSAL PURPOSES. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL OF SEDIMENT. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED.
3. BAGS SHOULD BE LOCATED IN WELL-VEGETATED (GRASSY) AREAS, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE FLOW PATH CAN BE PROVIDED OR ALLOW DISCHARGE FROM BAG TO FLOW THROUGH A SERIES OF SEDIMENT LOGS ETC... BAGS CAN BE USED INSIDE SEDIMENT TRAPS (FIGURE 14A).
4. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%.
5. THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. DO NOT ALTER OR CUT BAGS.

NOT TO SCALE

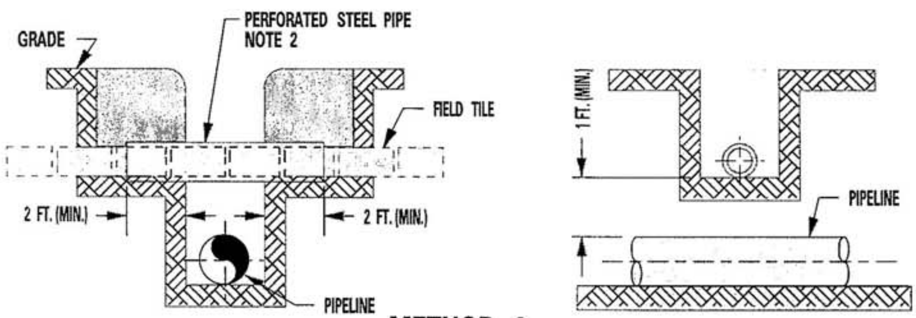
Appendix C-52	**FILTER BAG (DIRT BAG)**	



METHOD 1



METHOD 2

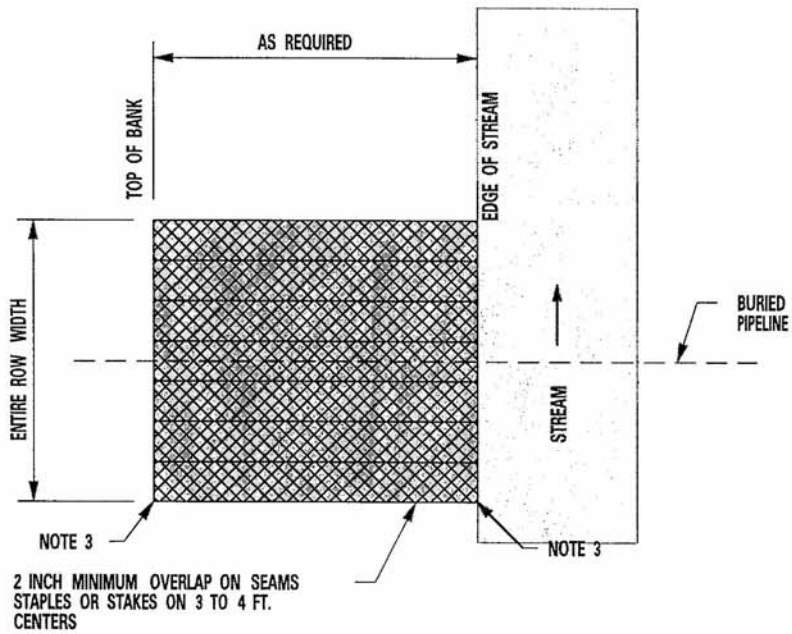


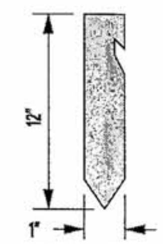
METHOD 3

NOTES:
1. REPLACEMENT PIPE TO BE AS NEAR AS POSSIBLE TO THE DIAMETER OF THE FIELD TILE.
2. STEEL CARRIER PIPE TO HAVE INSIDE DIAMETER AS NEAR AS POSSIBLE THE OUTSIDE DIAMETER OF THE FIELD TILE.
3. MAINTAIN ORIGINAL FLOW LINE OF FIELD TILE IN ALL METHODS.

NOT TO SCALE

Appendix C-53	FIELD TILE REPLACEMENT METHODS	



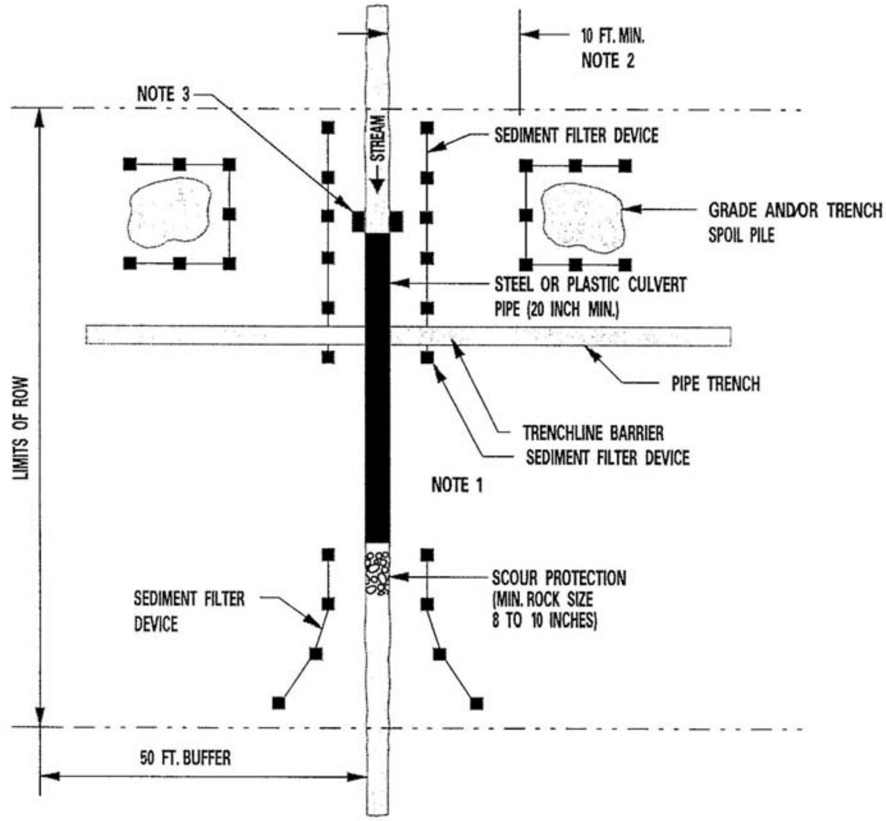


WOODEN STAKES

NOTES:
1. INSTALL JUTE NETTING DURING RESTORATION.
2. LIME, FERTILIZE, SEED AND MULCH AREA TO BE JUTE NETTED.
3. TRENCH IN AND BURY UPHILL AND UPSTREAM EDGE OF JUTE NETTING.
4. AN INTERCEPTOR DIVERSION WILL BE INSTALLED IMMEDIATELY ABOVE JUTE NETTING ON SLOPED BANKS.
5. ON SHORT BANKS (LESS THAN 10'), JUTE NETTING CAN BE PERPENDICULAR TO BANK SLOPE.
6. INSTALL ON STEEP SLOPES OR ON THE BANKS OF FLOWING STREAMS, OR IN UPLAND AREAS.

NOT TO SCALE

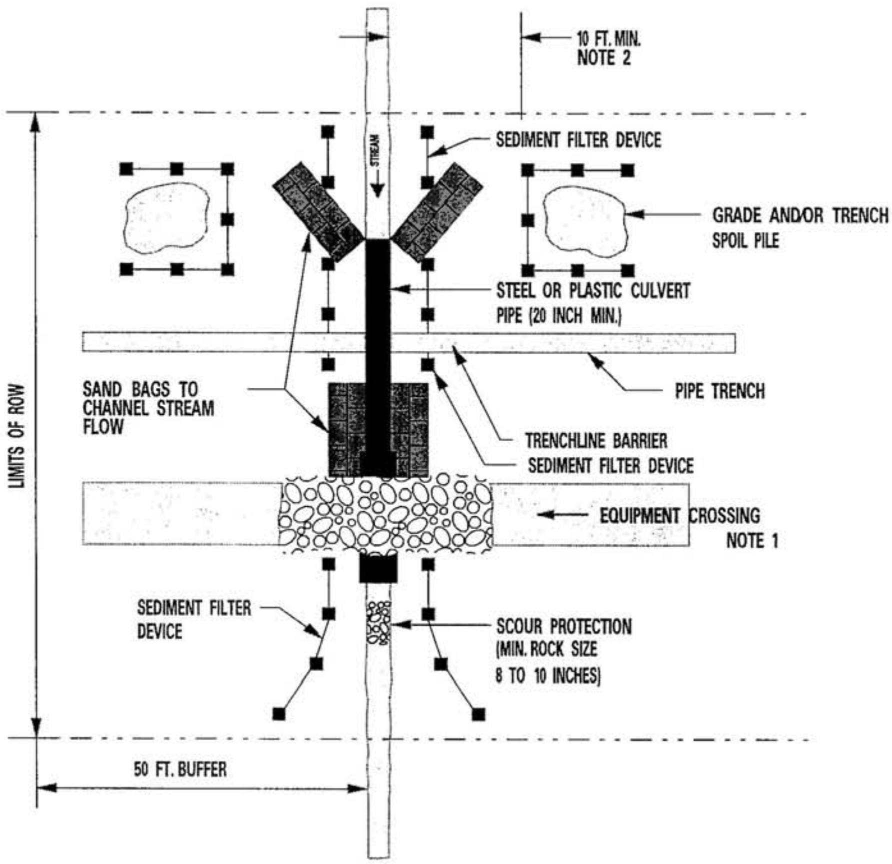
Appendix C-54	**EROSION CONTROL BLANKET**	



NOTES:
1. EQUIPMENT CROSSINGS ARE TO BE PREPARED AS ILLUSTRATED IN FIGURES 21 & 22 IF NEEDED.
2. GRADE AND TRENCH SPOIL WILL BE STOCKPILED AT LEAST 10 FEET FROM THE WATER'S EDGE, TOPOGRAPHY PERMITTING.
3. SAND BAGS OR EARTH FILLED SACKS WILL BE PLACED AT UPSTREAM END OF CULVERT TO CHANNEL FLOW.

NOT TO SCALE

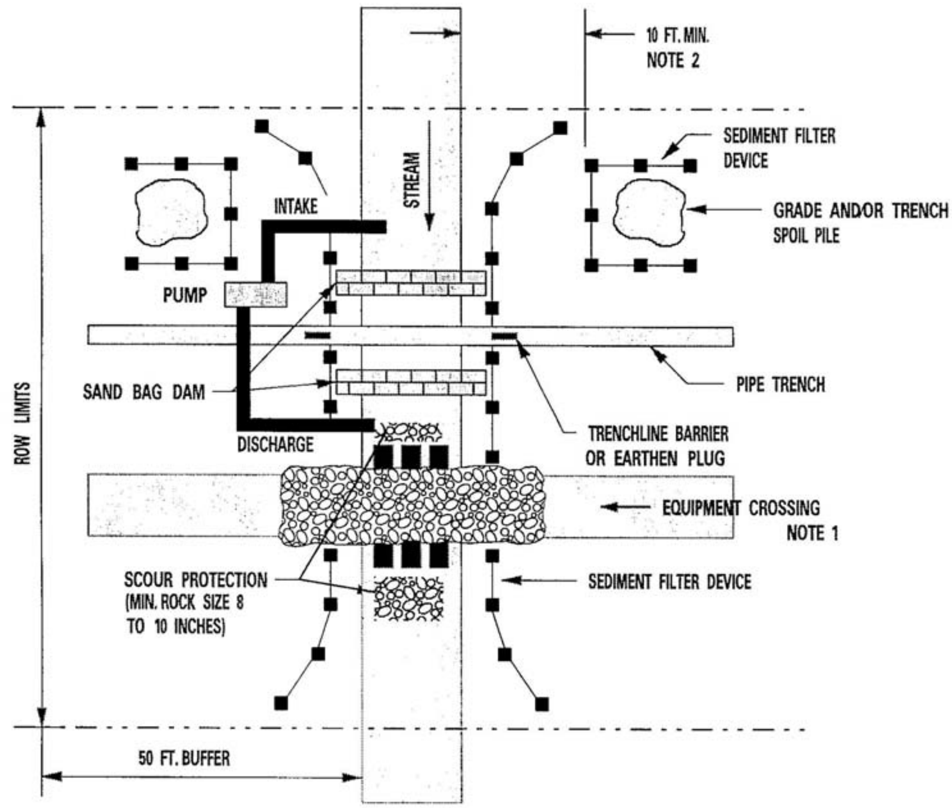
Appendix C-55	**TYPICAL STREAM CROSSING INTERMITTENT STREAMS**	



NOTES:
1. EQUIPMENT CROSSINGS ARE TO BE PREPARED AS ILLUSTRATED IN FIGURES 21 & 22.
2. GRADE AND TRENCH SPOIL WILL BE STOCKPILED AT LEAST 10 FEET FROM THE WATER'S EDGE.
3. INSTALL FLUME PIPE AFTER BLASTING (IF NECESSARY), BUT BEFORE TRENCHING.
4. PROPERLY ALIGN FLUME PIPE(S) TO PREVENT BANK EROSION OR STREAM BED SCOUR.
5. COMPLETE STREAMBED AND BANK STABILIZATION BEFORE RETURNING FLOW TO THE WATERBODY CHANNEL.

NOT TO SCALE

	TYPICAL STREAM CROSSING DRY-DITCH	

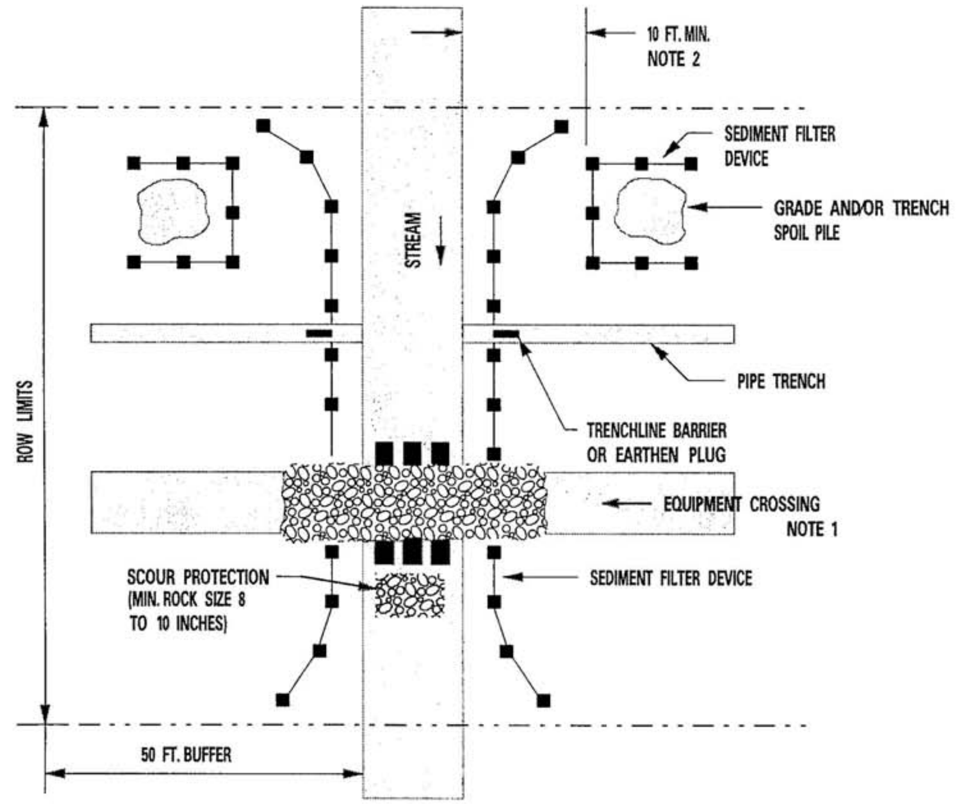


NOTES:

1. EQUIPMENT CROSSINGS ARE TO BE INSTALLED AS ILLUSTRATED IN FIGURES 21 OR 22.
2. GRADE AND TRENCH SPOIL WILL BE STOCKPILED AT LEAST 10 FEET FROM THE WATERS' EDGE, TOPOGRAPHY PERMITTING.
3. PUMP INTAKES WILL BE SCREENED. PREVENT STREAMBED SCOUR AT DISCHARGE.
4. SUFFICIENT PUMP CAPACITY WILL BE USED TO MAINTAIN STREAM FLOW AT ALL TIMES UNTIL BACKFILL AND REMOVAL OF SANDBAG DAM.
5. BACKUP PUMPS (AS SAME NUMBER AND CAPACITY AS ACTIVE PUMPS) WILL BE READILY AVAILABLE IN WORKING CONDITION ON SITE AT CROSSING.
6. CONSTRUCT DAMS WITH MATERIAL THAT PREVENT SEDIMENT AND OTHER POLLUTANTS FROM ENTERING THE WATERBODY.
7. MONITOR THE DAM AND PUMPS TO ENSURE PROPER OPERATIONS THROUGHOUT THE WATERBODY CROSSING.

NOT TO SCALE

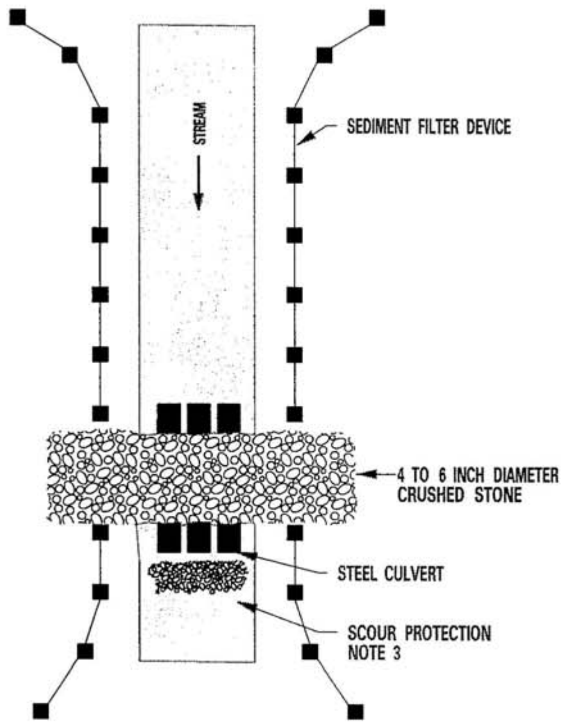
Appendix C-57	**TYPICAL STREAM CROSSING DAM AND PUMP**	



NOTES:
1. EQUIPMENT CROSSINGS ARE TO BE PREPARED AS ILLUSTRATED IN FIGURES 21 & 22.
2. GRADE AND TRENCH SPOIL WILL BE STOCKPILED AT LEAST 10 FEET FROM THE WATERS' EDGE.

NOT TO SCALE

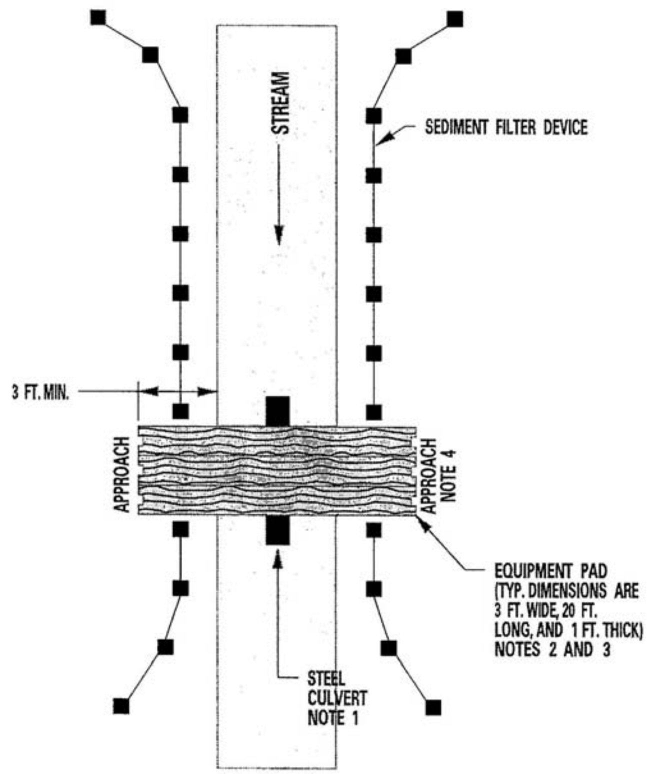
Appendix C-58	TYPICAL STREAM CROSSING WET-DITCH	



NOTES:
1. MINIMUM CONTOURING OF THE BOTTOM NECESSARY TO LAY THE CULVERTS LEVEL MAY BE DONE.
2. USE AS MANY CULVERTS AS REQUIRED TO SPAN ENTIRE STREAM BED. (CULVERTS SHALL BE PLACED SIDE BY SIDE.)
3. STONES WILL BE PLACED AT THE OUTLET OF ALL CULVERTS TO PROVIDE SCOUR PROTECTION IN THE EXISTING CHANNELS. MINIMUM ROCK SIZE: 8 TO 10 INCHES.
4. MINIMUM CULVERT DIAMETER 20 INCHES .
5. MAINTAIN ROCK AS NOT TO ALLOW MUD TO ENTER THE STREAM.
6. ALIGN CULVERTS TO PREVENT BANK EROSION.

NOT TO SCALE

Appendix C-59	**TEMPORARY EQUIPMENT CROSSING CULVERT AND STONE**	

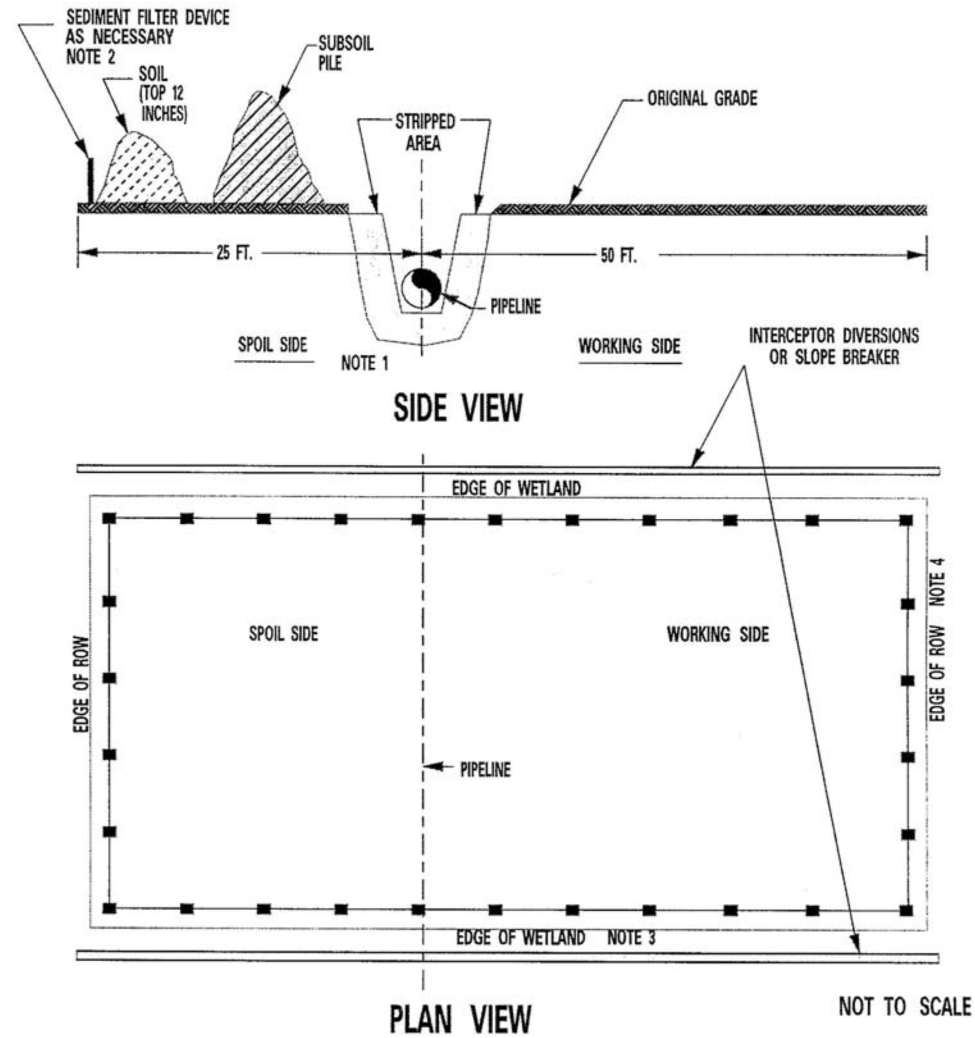


NOTES:

1. CULVERT PIPE UTILIZED IF ADDITIONAL SUPPORT IS REQUIRED. ALIGN CULVERT TO PREVENT SCOUR OR BANK EROSION.
2. ADDITIONAL PADS CAN BE PUT SIDE BY SIDE IF EXTRA WIDTH IS REQUIRED.
3. EQUIPMENT PAD TYPICALLY CONSTRUCTED OF HARDWOOD; MUST ACCOMMODATE THE LARGEST EQUIPMENT USED.
4. RAMP APPROACHES CAN EITHER BE GRADED OR DUG INTO GROUND. IF NECESSARY, CRUSHED STONE WILL BE USED TO RAMP UP TO THE EQUIPMENT PADS.
5. MINIMUM CULVERT DIAMETER 20 INCHES.
6. MAINTAIN PADS SO AS NOT TO ALLOW MUD TO ENTER THE STREAM

NOT TO SCALE

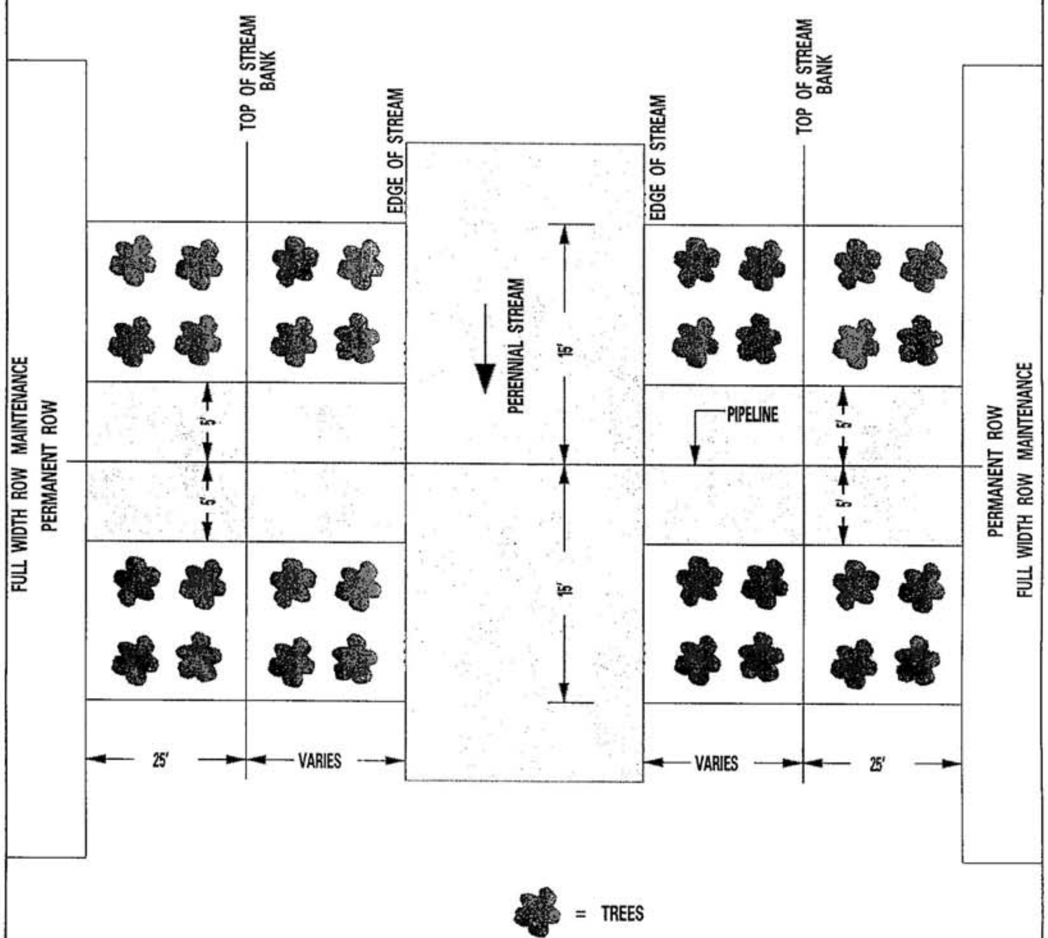
Appendix C-60	**TEMPORARY EQUIPMENT CROSSING EQUIPMENT PADS**	



NOTES:

1. IN WETLAND AREAS WHICH CONTAIN NO STANDING WATER OR IF SOILS ARE SATURATED OR FROZEN, TOPSOIL (TOP 12 INCHES) AND SUBSOIL WILL BE STOCKPILED SEPARATELY WITHIN THE WETLAND CONSTRUCTION ROW.
2. WETLANDS WITH STANDING WATER, SATURATED OR FROZEN SOIL, OPERATE EQUIPMENT PER REQUIREMENTS IN SECTION III.B-2. (ECS)
3. A SEDIMENT FILTER DEVICE WILL BE PLACED ACROSS THE ROW AT THE WETLAND'S EDGE, IMMEDIATELY UPSLOPE OF THE WETLAND BOUNDARY.
4. A SEDIMENT FILTER DEVICE WILL BE PLACED AT THE EDGE OF THE ROW AND AROUND SOIL AND SUBSOIL PILES AS NECESSARY.

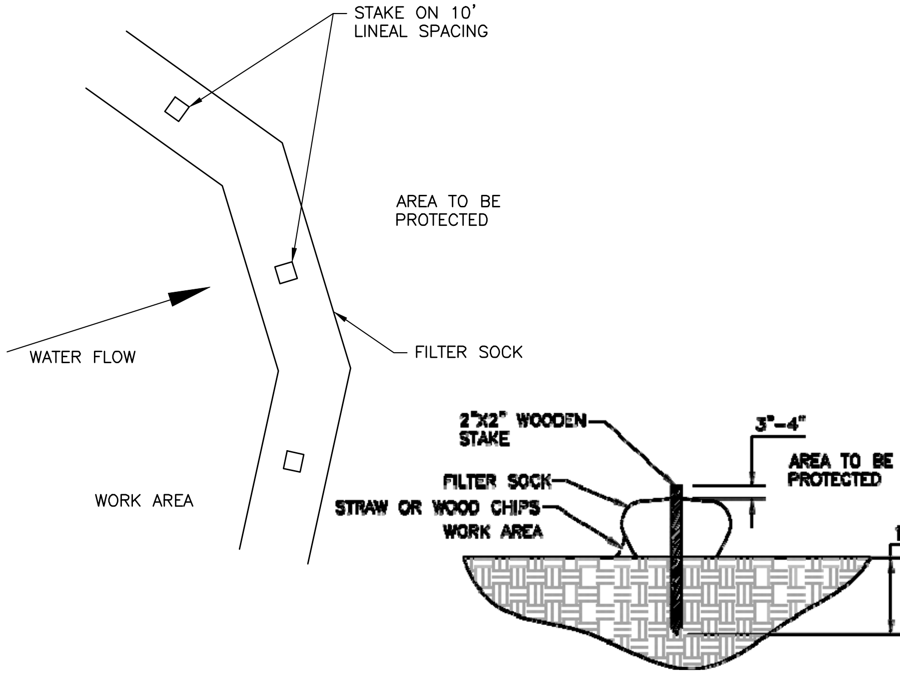
Appendix C-61	TYPICAL WETLAND CROSSING	



NOTES:
1. FULL WIDTH ROW MAINTENANCE PRACTICES WITHIN 25 FEET OF PERENNIAL STREAMBANKS ARE PROHIBITED.
2. A CORRIDOR UP TO 10 FEET WIDE CENTERED ON THE PIPELINE OR APPURTENANCES MAY BE MAINTAINED IN A HERBACEOUS STATE.
3. TREES LOCATED WITHIN 15 FEET OF THE PIPELINE AND GREATER THAN 15 FEET TALL MAY BE SELECTIVELY CUT AND REMOVED FROM THE ROW.

NOT TO SCALE

ROW MAINTENANCE
PERENNIAL STREAMS



NOTES:

1. COMPOST FILTER SOCK TO BE FILTREXX SILTSOXX OR APPROVED EQUIVALENT.
2. 8", 12", 18", AND 24" COMPOST FILTER SOCK TO BE USED. SEE PLAN SHEET FOR SIZES AND LOCATIONS.
3. ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF WHEN IT REACHES ½ THE ABOVE GROUND HEIGHT OF THE COMPOST FILTER SOCK.
4. COMPOST FILTER SOCK SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED COMPOST FILTER SOCK SHALL BE REPAIRED ACCORDING TO MANUFACTURERS SPECIFICATIONS.

NOT TO SCALE

Appendix C-63	TYPICAL COMPOST FILTER SOCK	

APPENDIX D
Access Roads Associated with the Leach XPress Project

APPENDIX D
Temporary and Permanent Access Roads Associated with the Leach XPress Project

Access Road ID	Milepost	Proposed Use	Existing Use	Upgrade Requirements[a]	Approx. Length (feet)	Approx. Width (feet)[b]
LEX						
TAR-166	0.6	Temporary	Existing field road	Grading and gravel	482	15
TAR-145	1.7	Temporary	Existing field road	Grading and gravel	1,318	25
TAR-146	2.1	Temporary	Existing field road	Grading and gravel	4,994	25
TAR-147	3.6	Temporary	Existing field road	Grading, gravel, and tree clearing	1,651	25
TAR-148	5.1	Temporary	Existing field road	Grading, gravel, and tree clearing	4,331	25
TAR-149	6.5	Temporary	Existing field road	Grading and gravel	6,447	25
TAR-122	8.6, RR-1	Temporary	Existing gravel and dirt road	None	1,736	14
TAR-123	10.3	Temporary	Existing field road	Grading, widening, and gravel	870	20
TAR-124	11.3	Temporary	Existing gravel and dirt road	Grading and gravel	563	20
TAR-125	14.1, RR-2	Temporary	Existing gravel and dirt road	None	3,971	25
PAR-72	17.1, RR-3	Permanent	Existing gravel road	Grading, widening, and gravel	2,570	25
PAR-175	17.4	Permanent	Open land / Forested land	Clearing, grading, and gravel	843	10
TAR-70	18.0	Temporary	Forested land / Existing paved road	Clearing, grading, and gravel	1,275	25
TAR-75	19.1	Temporary	Existing gravel drive	Grading and widening	218	25
TAR-13	21.1	Temporary	Open land	Grading and gravel	660	25
TAR-HDD-1	21.2	Temporary	Open land / Forested land	Clearing, grading, and gravel	518	25
TAR-126	21.3	Temporary	Open land / Existing dirt road	Grading, clearing, and gravel	964	25
TAR-14	21.4	Temporary	Open land / Existing dirt road	Grading and gravel	2,488	25
TAR-168	24.3	Temporary	Existing gravel road	None	1,285	10
TAR-169	24.6	Temporary	Existing gravel road	None	2,601	15
TAR-HDD-2	25.2, RR-5	Temporary	Open land / Forested land	Clearing, grading, and gravel	258	25
TAR-156	25.8, RR-5	Temporary	Existing dirt road / Open land	Grading, clearing, and gravel	741	10
TAR-156A	25.8, RR-5	Temporary	Existing dirt road / Open land	Grading, clearing, and gravel	89	10
TAR-HDD-3	25.8, RR-5	Temporary	Forested land / Open land	Clearing, grading, and gravel	379	25
TAR-167	26.9, RR-5	Temporary	Existing field road / Forested land	Clearing, grading, and gravel	6,413	25
TAR-27	28.6	Temporary	Existing field road	Grading and gravel	334	16
TAR-38	31.1	Temporary	Existing dirt and gravel road	None	3,512	25
TAR-63	34.8	Temporary	Existing dirt road	Grading, clearing, and gravel	943	25
TAR-39	38.9	Temporary	Existing field road	Grading	2,167	10
TAR-62	45.1	Temporary	Existing dirt road	None	235	25
TAR-2	46.2	Temporary	Existing dirt road / Forest / Open land	Clearing and grading	1,539	25

APPENDIX D
Temporary and Permanent Access Roads Associated with the Leach XPress Project

Access Road ID	Milepost	Proposed Use	Existing Use	Upgrade Requirements[a]	Approx. Length (feet)	Approx. Width (feet)[b]
TAR-40	48.9	Temporary	Existing dirt road	None	883	10
TAR-41	49.5	Temporary	Existing dirt road	Widening and gravel	2,271	10
PAR-176	49.8	Permanent	Forested land	Clearing, grading, and gravel	16	10
TAR-32	51.6	Temporary	Existing field road	None	915	10
TAR-20	59.4	Temporary	Existing field road	Clearing	1,199	10
TAR-33	64.5	Temporary	Existing dirt road	Widening and gravel	433	15
TAR-60	65.9	Temporary	Open land / Existing dirt road	Widening and gravel	1,652	25
TAR-16	66.9	Temporary	Existing dirt road	Widening	318	25
TAR-128	66.9	Temporary	Open land	Grading and gravel	119	25
TAR-59	67.3	Temporary	Open land / Existing dirt road	Gravel	2,275	15
TAR-74	68.8	Temporary	Open land / Existing dirt road	Gravel	1,691	15
TAR-73	74.3	Temporary	Existing dirt road	Widening and gravel	1,482	25
TAR-71	74.6	Temporary	Existing dirt road	Widening and gravel	1,879	25
TAR-34	76.8	Temporary	Existing dirt road	Widening and gravel	721	15
PAR-177	83.2	Permanent	Open land	Grading and gravel	7	10
TAR-42	85.3	Temporary	Existing dirt road	None	1,952	10
TAR-44	87.1	Temporary	Open land / Existing field road	None	926	10
TAR-30	87.5	Temporary	Open land / Existing field road	Grading	2,052	15
TAR-15	89.4	Temporary	Forested land / Open land	Clearing, grading, and gravel	573	25
TAR-HDD-4	89.4	Temporary	Open land / Forested land	Clearing, grading, and gravel	913	25
TAR-19	89.7	Temporary	Existing dirt road	Widening and gravel	806	25
TAR-18	89.8	Temporary	Existing dirt road / Open land	Grading and gravel	1,464	25
TAR-57	102.3	Temporary	Existing dirt road / Open land	Widening and gravel	993	25
TAR-58	103.3	Temporary	Existing field road	Widening and gravel	2,834	25
TAR-76	104.7	Temporary	Open land	Grading, clearing, and gravel	301	25
TAR-43	105.5	Temporary	Existing dirt road	Gravel	331	10
TAR-3	109.7	Temporary	Existing dirt road	Clearing, widening, and gravel	939	10
TAR-22	110.1	Temporary	Forested land	Clearing and gravel	129	10
TAR-28	110.5	Temporary	Existing dirt road	None	1,698	10
TAR-23	111.7	Temporary	Existing gravel and dirt road	Clearing, grading, and gravel	1,571	10
TAR-56	113.7	Temporary	Open land / Existing dirt road	Grading and gravel	1,865	25
TAR-24	115.7	Temporary	Existing dirt road	Gravel	1,791	15
TAR-25	116.5	Temporary	Existing dirt and gravel road	Widening and gravel	2,526	10
TAR-26	116.7	Temporary	Open land / Existing gravel road	Gravel	702	15

APPENDIX D
Temporary and Permanent Access Roads Associated with the Leach XPress Project

Access Road ID	Milepost	Proposed Use	Existing Use	Upgrade Requirements[a]	Approx. Length (feet)	Approx. Width (feet)[b]
PAR-178	116.7	Permanent	Open land	Grading and gravel	17	10
TAR-5	117.7	Temporary	Open land / Existing dirt road	Widening and gravel	2,069	25
TAR-172	119.6	Temporary	Existing field road	Widening and gravel	1,990	15
TAR-171	119.8	Temporary	Existing field road	Widening and gravel	1,672	15
TAR-17	119.9	Temporary	Open land / Existing dirt road	Grading, clearing, widening, and gravel	3,513	15
TAR-HDD-5	120.0	Temporary	Open land	Clearing, grading and gravel	661	25
TAR-10	120.1	Temporary	Forested land / Open land	Clearing and gravel	303	25
TAR-66	122.5	Temporary	Open land	Grading and gravel	720	25
TAR-21	125.7	Temporary	Existing paved drive and dirt road	None	537	25
TAR-164	129.4	Temporary	Open land / Existing dirt road	Grading, widening, and gravel	1,295	10
TAR-52	130.2	Temporary	Existing dirt road	Grading, widening, and gravel	1,483	15
TAR-51	130.8	Temporary	Existing gravel road	None	66	10
TAR-HDD-6	130.8	Temporary	Open land	Clearing, grading and gravel	388	10
TAR-165	131.2	Temporary	Existing gravel road	None	1,465	10
R-801 Loop						
TAR-53	0.6	Temporary	Existing gravel road	None	2.201	25
TAR-49	2.3	Temporary	Existing gravel road	Widening and gravel	554	25
TAR-48	4.2	Temporary	Existing field road	Grading, widening, and gravel	1,246	25
TAR-133	5.5	Temporary	Forested land	Clearing, grading, and gravel	123	25
TAR-47	5.9	Temporary	Existing field road	Grading and gravel	2,097	25
TAR-50	6.2	Temporary	Existing field road	Grading and gravel	1,293	25
TAR-8	7.7	Temporary	Existing dirt road	Widening and gravel	1,203	25
TAR-134	9.4	Temporary	Existing gravel road / Open land	Widening and gravel	2,442	25
PAR-179	14.2	Permanent	Forested land	Clearing, grading, and gravel	139	10
TAR-46	14.5	Temporary	Existing dirt road / Forested land	Gravel	1,468	25
TAR-77	15.2	Temporary	Open land / Existing dirt road	Grading and gravel	2,545	25
TAR-68	15.6	Temporary	Existing field road	Widening and gravel	3,003	25
TAR-135	19.3	Temporary	Existing field road	Grading and gravel	1,112	25
TAR-136	20.4	Temporary	Existing field road	Grading and gravel	5,413	25
TAR-137	21.1	Temporary	Existing dirt road / Field road / Forested land	Clearing, grading, and gravel	3,250	25
TAR-138	22.5	Temporary	Existing field road	Grading and gravel	1,743	25
TAR-160	22.8	Temporary (Pipe Yard 21)	Open land	Grading and gravel	223	25

APPENDIX D
Temporary and Permanent Access Roads Associated with the Leach XPress Project

Access Road ID	Milepost	Proposed Use	Existing Use	Upgrade Requirements[a]	Approx. Length (feet)	Approx. Width (feet)[b]
TAR-161	24.1	Temporary (Pipe Yard 23)	Open land / Existing gravel drive	Grading and gravel	248	25
BM-111 Loop						
TAR-139	0.0	Temporary	Driveway / open land	Grading and gravel	248	25
TAR-162	1.0	Temporary	Forested land	Clearing, grading, and gravel	166	25
TAR-140	1.4	Temporary	Existing dirt road	Grading and gravel	255	25
R-501 Abandonment						
TAR-80	0.9	Temporary	Open land / existing dirt road	Gravel	204	25
TAR-81	1.0	Temporary	Existing gravel road	Gravel	263	25
TAR-151	1.9	Temporary	Open land	Grading	1,542	25
TAR-152	2.1	Temporary	Open land / Existing dirt road	Grading	2,554	25
TAR-153	2.1	Temporary	Open land	Grading	4,523	25
TAR-82	3.1	Temporary	Open land	Grading and gravel	520	25
TAR-83	3.2	Temporary	Open land	Grading and gravel	1,329	25
TAR-154	3.3	Temporary	Open land	Grading	133	25
TAR-84	3.3	Temporary	Existing driveway	None	336	25
TAR-85	3.4	Temporary - Walking Path	Open land	None	187	5
TAR-86	3.5	Temporary	Open land / Existing gravel road	Gravel	207	25
TAR-87	3.5	Temporary - Walking Path	Open land	None	385	5
TAR-88	4.1	Temporary – Walking Path	Open land	None	72	5
TAR-89	4.1	Temporary – Walking Path	Open land	None	3	5
TAR-90	4.2	Temporary – Walking Path	Open land	None	813	5
TAR-93	6.5	Temporary	Existing dirt road / Open land	Clearing, grading, and gravel	590	25
TAR-94	8.0	Temporary – Walking Path	Open land	None	322	5
TAR-95	8.1	Temporary	Existing field road	Widening and grading	1,965	25
TAR-96	8.1	Temporary – Walking Path	Open land	None	538	5
TAR-97	8.2	Temporary- Walking Path	Open land	None	448	5
TAR-98	8.9	Temporary	Existing dirt / Field road	Widening and grading	1,282	25
TAR-99	8.9	Temporary- Walking Path	Open land	None	292	5
TAR-101	9.2	Temporary- Walking Path	Open land	None	562	5
TAR-104	9.7	Temporary	Open land / Forested land	Clearing, grading, and gravel	712	25
TAR-105	11.9	Temporary	Open land	Gravel	524	25
TAR-155	12.0	Temporary	Open land	Gravel	995	25
TAR-107	13.3	Temporary- Walking Path	Open land	None	696	5
TAR-108	13.8	Temporary- Walking Path	Open land	None	194	5

APPENDIX D Temporary and Permanent Access Roads Associated with the Leach XPress Project						
Access Road ID	**Milepost**	**Proposed Use**	**Existing Use**	**Upgrade Requirements[a]**	**Approx. Length (feet)**	**Approx. Width (feet)[b]**
TAR-109	16.8	Temporary	Open land	Gravel	247	25
TAR-177	17.3	Temporary	Open land	Gravel	472	18
TAR-111	20.1	Temporary	Open land	Gravel	1,538	25
TAR-112	21.6	Temporary	Existing field road / Open land	Grading and gravel	2,042	25
TAR-178	23.1	Temporary	Open land	Gravel	1,310	25
TAR-113	23.8	Temporary	Open land	Gravel	457	20
TAR-173	23.8	Temporary	Open land	Grading and gravel	2,212	25
TAR-174	26.3	Temporary	Open land	Grading and gravel	2,165	25
Aboveground Facilities						
LEX						
PAR-F-2	0.0	Permanent (LEX launcher facility)	Existing gravel road	None	139	29
PAR-MLV-1	3.1	Permanent (MLV Site #1)	Open land	Grade and gravel	161	10
PAR-F-3	7.6, RR-1	Permanent (Lone Oak CS)	Existing property access	Grade, gravel, and trim trees	441	24
PAR-MLV-2	18.5, RR-4	Permanent (MLV Site #2)	Agricultural land	Grading and gravel	292	20
PAR-MLV-3	31.7	Permanent (MLV Site #3)	Open land	Grading and gravel	76	10
PAR-MLV-4	49.3	Permanent (MLV Site #4)	Open land	Grading and gravel	192	10
PAR-F-5	57.2	Permanent (Summerfield CS)	Existing farm road (Town Hwy 209)	Grade and gravel	3,421	16
PAR-127	65.6	Permanent (MLV Site #5)	Existing dirt road	Grading and gravel	838	20
PAR-MLV-6	84.3	Permanent (MLV Site #6)	Open land	Grading and gravel	132	10
PAR-MLV-7	104.2	Permanent (MLV Site #7)	Open land	Grading and gravel	165	10
PAR-MLV-8	122.0	Permanent (MLV Site #8)	Forested land	Clearing, grading, and gravel	391	10
LEX1						
PAR-F-21	0.0	Permanent (K-260 RS)	Existing field road / forested land	Clearing, grading and gravel	2,241	20
PAR-F-27	0.0	Permanent (K-260 RS) (tie-in valve)	Forested land	Clearing, grading and gravel	211	16
PAR-F-26	0.0	Permament (K-260 RS)	Existing driveway / Forested land	Clearing, grading and gravel	1,253	18
PAR-F-22	0.3	Permanent (K-260 RS)	Existing field road	Grading and gravel	4,169	20
PAR-F-6	1.2	Permanent (LEX1 receiver facility)	Open land	Grading and gravel	956	25
R-801 Loop						
PAR-F-8	0.0	Permanent (R-System RS)	Existing driveway / existing farm road	Grading and gravel	557	8
PAR-F-28	0.05	Permanent (R-System RS tie-in facility)	Open land	Grading and gravel	385	16
PAR-F-29	0.06	Permanent (R-System RS)	Existing driveway / existing farm road	None	798	20

APPENDIX D
Temporary and Permanent Access Roads Associated with the Leach XPress Project

Access Road ID	Milepost	Proposed Use	Existing Use	Upgrade Requirements[a]	Approx. Length (feet)	Approx. Width (feet)[b]
PAR-MLV-9	9.7	Permanent (MLV Site #9)	Existing gravel road / Forested land	Grading and gravel	178	10
PAR-F-19	12.8	Permanent (Benton RS)	Open land	Gravel	12	25
PAR-F-20	24.2	Permanent (McArthur RS)	Forested land	Clearing, grading, and gravel	686	20
PAR-F-11	24.2	Permanent (McArthur RS)	Existing dirt road / Forested land	Clearing, grading, and gravel	541	20
BM-111 Loop						
PAR-F-24	2.85	Permanent (Ceredo CS)	Existing gravel road	Gravel	37	20
Existing Columbia Pipeline System						
PAR-F-14	51.5 [d]	Permanent (Oak Hill CS)	Agricultural land	Grading and gravel	712	24
PAR-F-25	0.0 [d]	Permanent (Crawford CD regulator valve facility)	Open land	Grading and gravel	46	16
TAR-F-15	51.5 [c]	Temporary (Oak Hill CS)	Existing farm road (Mining Haul Rd) / Agricultural land	Existing – grading New –grading and gravel	2,174	20-60
PAR-F-16	51.5 [c]	Permanent (Oak Hill CS)	Agricultural land / Forested land	Clearing, grading, and gravel	1,849	16
PAR-F-12	34.7 [c]	Permanent (R-486 OS)	Agricultural land	Grading and gravel	370	20
PAR-F-13	37.1 [c]	Permanent (R-130 OS)	Existing driveway / Open land	Grading and gravel	63	16
TAR-F-17	53.7 [c]	Temporary (R-543 OS)	Existing gravel road	None	123	20

[a] All temporary access roads will be utilized during the construction phase only and returned to pre-construction conditions following Project completion. Any upgrade requirements listed for permanent access roads reflect the permanent disposition of the road, as needed to maintain access during operation of the Project facilities.
[b] Approximate width corresponds to the average width of the proposed access road; however, an expanded width across short distances may be required in specific locations to accommodate safe turning areas for construction equipment.
[c] Milepost is associated with Columbia's existing Line R-501.

APPENDIX E
Site-Specific Deviations from the FERC Plan and Procedures

APPENDIX E Site-Specific Deviations from the FERC Plan and Procedures		
Workspace ID	**Milepost**	**Justification**
LEX		
Construction corridor	0.0-131.3	Necessary to provide for safe and efficient construction of the pipeline through hilly terrain, steep slope conditions, and shallow bedrock.
ATWS-1,815	1.7	Necessary to provide for safe and efficient construction of the pipeline through hilly terrain, steep slope conditions, and shallow bedrock.
ATWS-1,816	1.8	ATWS is necessary to accommodate additional construction equipment and placement of excavated soils outside of the waterbody.
ATWS-2,128	8.3, RR-1	ATWS is necessary to accommodate additional construction equipment and placement of excavated soils outside of the waterbody.
ATWS-49	9.7	ATWS is needed to accommodate additional construction equipment necessary to facilitate road crossing and for placement of excavated soils.
ATWS-1,178	21.1	ATWS is necessary to accommodate staging of prefabricated section of pipe for HDD.
ATWS-94	21.1	ATWS is necessary to accommodate additional construction equipment.
ATWS-1,301	21.2	ATWS is necessary to accommodate additional vehicle/equipment parking.
ATWS-1,302	21.3	ATWS is necessary to accommodate equipment to withdraw water for hydrostatic testing.
ATWS-1,303	21.3	ATWS is necessary to accommodate equipment to withdraw water for hydrostatic testing
ATWS-105	25.2	ATWS is necessary to accommodate additional construction equipment.
ATWS-106	25.79, RR-5	ATWS is necessary to accommodate additional construction equipment and for spoil storage due to extreme slopes
ATWS-2,084	25.87, RR-5	ATWS is necessary to accommodate additional construction equipment HDD
ATWS-145	30.4	ATWS is needed to accommodate additional construction equipment necessary to facilitate road crossing and for placement of excavated soils.
ATWS-1,769	36.3	ATWS is needed for additional construction equipment and placement of excavated soils.
ATWS-1,065	36.5	ATWS is needed to accommodate additional construction equipment necessary to facilitate road crossing and for placement of excavated soils.
ATWS-262	42.8	ATWS is needed to accommodate additional construction equipment necessary to facilitate road crossing and for placement of excavated soils.
ATWS-342	50.9	ATWS is needed to accommodate additional construction equipment necessary to facilitate road crossing and for placement of excavated soils outside of the waterbody.
ATWS-2163	50.9, RR-6	ATWS is needed to accommodate additional construction equipment necessary to facilitate road crossing
ATWS-364	54.1	ATWS is needed to accommodate additional construction equipment necessary to facilitate road crossing and for placement of excavated soils.
ATWS-2106	54.8, RR-7	ATWS is needed to segregate the topsoil.
ATWS-369	56.1	ATWS is needed to accommodate additional construction equipment necessary to facilitate road crossing and for placement of excavated soils.
ATWS-390	61.9	ATWS is needed to accommodate additional construction equipment necessary to facilitate road crossing and for placement of excavated soils.
ATWS-422	66.9	ATWS is necessary to accommodate additional construction equipment.
ATWS-1,417	66.9	ATWS is necessary to accommodate equipment to withdraw water for hydrostatic testing.
ATWS-423	67.3	ATWS is necessary to accommodate additional construction equipment.
ATWS-508	77.3	ATWS is needed to accommodate additional construction equipment necessary to facilitate road crossing and for placement of excavated soils outside of the waterbody.
ATWS-681	89.8	ATWS is necessary to accommodate staging of prefabricated section of pipe for HDD.
ATWS-1,530	104.7	ATWS is needed for additional construction equipment and placement of excavated soils.
ATWS-740	107.7	ATWS is needed to accommodate additional construction equipment necessary to facilitate road crossing and for placement of excavated soils.
ATWS-741	107.7	ATWS is needed to accommodate additional construction equipment necessary to facilitate road crossing and for placement of excavated soils.
ATWS-1,532	107.7	ATWS is needed for additional construction equipment and placement of excavated soils.

APPENDIX E
Site-Specific Deviations from the FERC Plan and Procedures

Workspace ID	Milepost	Justification
ATWS-1,537	108.9	ATWS is needed to accommodate additional construction equipment necessary to facilitate road crossing and for placement of excavated soils.
ATWS-747	108.9	ATWS is needed to accommodate additional construction equipment necessary to facilitate road crossing and for placement of excavated soils.
ATWS-764	111.4	ATWS is needed to accommodate additional construction equipment necessary to facilitate major PI and for placement of excavated soils outside of the waterbody.
ATWS-772	112.3	ATWS is needed to accommodate additional construction equipment necessary to facilitate road crossing and for placement of excavated soils.
ATWS-773	112.3	ATWS is needed to accommodate additional construction equipment necessary to facilitate road crossing and for placement of excavated soils.
ATWS-806	118.8	ATWS is needed to accommodate additional construction equipment necessary to facilitate road crossing and for placement of excavated soils.
ATWS-813	119.6	ATWS is necessary to accommodate additional construction equipment.
ATWS-1,579	120.0	ATWS is necessary to accommodate equipment to withdraw water for hydrostatic testing and HDD.
ATWS-814	120.1	ATWS is necessary to accommodate additional construction equipment.
ATWS-837	124.5	ATWS is needed to accommodate additional construction equipment necessary to facilitate road crossing and for placement of excavated soils outside of the waterbody.
ATWS-838	124.5	ATWS is needed to accommodate additional construction equipment necessary to facilitate road crossing and for placement of excavated soils outside of the waterbody.
ATWS-2,031	129.9	ATWS is needed to accommodate additional construction equipment necessary to facilitate road crossing and for placement of excavated soils.
ATWS-859	130.2	ATWS is necessary to accommodate additional construction equipment.
LEX1		
Construction corridor	0.0-1.2	Necessary to provide for safe and efficient construction of the pipeline through hilly terrain and steep slope conditions.
R-801 Loop		Necessary to provide for safe and efficient construction of the pipeline through hilly terrain, steep slope conditions, and shallow bedrock.
Construction corridor	0.0-24.2	Necessary to provide for safe and efficient construction of the pipeline through hilly terrain, steep slope conditions, and shallow bedrock.
ATWS-884	3.4	ATWS is needed to accommodate additional construction equipment necessary to facilitate road crossing and for placement of excavated soils.
ATWS-890	6.7	ATWS is needed to accommodate additional construction equipment necessary to facilitate road crossing and for placement of excavated soils.
ATWS-897	8.9	ATWS is needed to accommodate additional construction equipment necessary to facilitate road crossing and for placement of excavated soils.
BM-111 Loop		
Construction corridor	0.0-2.8	Necessary to provide for safe and efficient construction of the pipeline through hilly terrain, steep slope conditions, and shallow bedrock.
ATWS-1050	1.0	ATWS is necessary to accommodate additional construction equipment.
ATWS-1,181	1.1	Necessary to provide for safe and efficient construction of the pipeline through steep slope conditions.
ATWS-1730	1.4	ATWS is necessary to accommodate staging of prefabricated section of pipe for HDD.

APPENDIX F
Geological Formations Crossed by the Leach XPress Project

APPENDIX F
Geologic Formations by Milepost Crossed by the Leach XPress Project

Geologic Formation/ Unit	Facility	Begin MP	End MP	Period/Era	Primary Lithology	Secondary Lithology	Description
Dunkard Group	LEX	2.0	21.3	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	21.6	25.2	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	26.0, RR-5	38.7	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	38.8	40.6	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	40.7	41.4	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	41.5	41.8	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	42.0	43.9	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	44.0	45.0	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	45.1	48.0	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	48.1	48.3	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	48.4	48.5	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	48.5	48.7	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	48.9	49.2	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	49.3	49.3	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.

APPENDIX F
Geologic Formations by Milepost Crossed by the Leach XPress Project

Geologic Formation/ Unit	Facility	Begin MP	End MP	Period/Era	Primary Lithology	Secondary Lithology	Description
Dunkard Group	LEX	49.6	49.7	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	49.8	49.8	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	50.1	50.2	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	50.4	50.5	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	51.8	51.9	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	51.9	52.0	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	52.1	52.2	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	52.7	52.8	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	54.4	54.5	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	57.4	57.4	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	73.9	74.0	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	74.9	75.0	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	75.2	75.2	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	75.8	75.9	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.

APPENDIX F
Geologic Formations by Milepost Crossed by the Leach XPress Project

Geologic Formation/ Unit	Facility	Begin MP	End MP	Period/Era	Primary Lithology	Secondary Lithology	Description
Dunkard Group	LEX	76.2	76.3	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	77.0	77.1	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	77.3	77.4	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	77.9	78.0	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	LEX	78.3	78.4	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	Mainline Valve 1	3.1	3.1	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	Mainline Valve 2	18.6, RR-4	18.6, RR-4	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	Mainline Valve 3	31.7	31.7	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	Mainline Valve 4	49.3	49.3	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Dunkard Group	Lone Oak CS	7.4	7.4	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
Monongahlea Group	LEX	0.0	0.0	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	1.6	2.0	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	21.3	21.6	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	25.2	25.6, RR-5	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone

APPENDIX F
Geologic Formations by Milepost Crossed by the Leach XPress Project

Geologic Formation/ Unit	Facility	Begin MP	End MP	Period/Era	Primary Lithology	Secondary Lithology	Description
Monongahlea Group	LEX	25.6, RR-5	26.0, RR-5	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	38.7	38.8	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	40.6	40.7	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	41.4	41.5	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	41.8	42.0	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	43.9	44.0	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	45.0	45.1	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	48.0	48.1	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	48.3	48.4	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	48.5	48.5	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	48.7	48.9	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	49.2	49.3	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	49.3	49.6	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea	LEX	49.7	49.8	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale,

APPENDIX F
Geologic Formations by Milepost Crossed by the Leach XPress Project

Geologic Formation/ Unit	Facility	Begin MP	End MP	Period/Era	Primary Lithology	Secondary Lithology	Description
Group							siltstone, and mudstone
Monongahlea Group	LEX	49.8	50.1	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	50.2	50.4	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	50.5	50.8, RR-6	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	51.0, RR-6	51.2	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	51.3	51.8	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	51.9	51.9	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	52.0	52.1	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	52.2	52.4	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	52.5	52.7	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	52.8	54.4	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	54.5	55.3, RR-7	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	55.5, RR-7	57.4	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	57.4	57.8	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone

APPENDIX F
Geologic Formations by Milepost Crossed by the Leach XPress Project

Geologic Formation/ Unit	Facility	Begin MP	End MP	Period/Era	Primary Lithology	Secondary Lithology	Description
Monongahlea Group	LEX	58.2	58.7	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	58.8	59.0	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	59.2	59.5	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	60.0	60.1	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	60.5	61.1	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	62.4	62.5	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	62.5	63.2	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	63.4	63.5	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	64.1	64.2	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	64.5	64.6	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	68.0	68.2	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	71.3	73.9	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	74.0	74.9	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone

APPENDIX F Geologic Formations by Milepost Crossed by the Leach XPress Project							
Geologic Formation/ Unit	Facility	Begin MP	End MP	Period/Era	Primary Lithology	Secondary Lithology	Description
Monongahlea Group	LEX	75.0	75.2	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	75.2	75.8	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	75.9	76.2	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	76.3	77.0	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	77.1	77.3	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	77.4	77.9	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	78.0	78.3	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	78.4	79.1	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	83.0	83.1	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	84.0	86.0	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	86.3	86.5	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	87.0	87.2	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	88.4	88.4	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea	LEX	88.7	89.0	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale,

APPENDIX F
Geologic Formations by Milepost Crossed by the Leach XPress Project

Geologic Formation/ Unit	Facility	Begin MP	End MP	Period/Era	Primary Lithology	Secondary Lithology	Description
Group							siltstone, and mudstone
Monongahlea Group	LEX	90.2	90.3	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	90.4	90.8	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	90.9	91.3	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	91.7	91.8	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	92.4	92.5	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	92.6	92.6	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX	93.4	93.6	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	Summerfield CS	57.1	57.1	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	Mainline Valve 6	84.3	84.3	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Monongahlea Group	LEX launcher	0.0	0.0	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Conemaugh Group	LEX	50.8, RR-6	50.9, RR-6	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	51.2	51.3	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	52.4	52.5	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	55.3, RR-7	55.5, RR-7	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.

APPENDIX F
Geologic Formations by Milepost Crossed by the Leach XPress Project

Geologic Formation/ Unit	Facility	Begin MP	End MP	Period/Era	Primary Lithology	Secondary Lithology	Description
Conemaugh Group	LEX	57.8	58.2	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	58.7	58.8	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	59.0	59.2	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	59.5	60.0	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	60.1	60.5	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	61.1	62.4	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	62.5	62.5	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	63.2	63.4	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	63.5	64.1	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	64.2	64.5	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	64.6	68.0	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	68.2	71.3	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	79.1	83.0	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	83.1	84.0	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	86.0	86.3	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	86.5	87.0	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	87.2	88.4	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	88.4	88.7	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	89.0	90.2	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	90.3	90.4	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.

APPENDIX F Geologic Formations by Milepost Crossed by the Leach XPress Project							
Geologic Formation/ Unit	**Facility**	**Begin MP**	**End MP**	**Period/Era**	**Primary Lithology**	**Secondary Lithology**	**Description**
Conemaugh Group	LEX	90.8	90.9	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	91.3	91.7	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	91.8	92.4	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	92.5	92.6	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	92.6	93.4	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	93.6	98.2	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	98.4	99.9	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	100.3	101.9	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	102.1	102.6	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	103.1	105.4	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	105.4	105.9	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	105.9	106.2	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	106.3	106.6	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	106.7	107.1	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	107.3	109.4	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	LEX	111.2	111.3	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	BM-111 Loop	0.8	2.6	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	Mainline Valve 5	65.6	65.6	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Conemaugh Group	Mainline Valve 7	104.2	104.2	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
Allegheny and Pottsville	LEX	98.2	98.4	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine

APPENDIX F
Geologic Formations by Milepost Crossed by the Leach XPress Project

Geologic Formation/ Unit	Facility	Begin MP	End MP	Period/Era	Primary Lithology	Secondary Lithology	Description
Groups, Undivided							fossils.
Allegheny and Pottsville Groups, Undivided	LEX	99.9	100.3	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	LEX	101.9	102.1	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	LEX	102.6	103.1	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	LEX	105.4	105.4	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	LEX	105.9	105.9	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	LEX	106.2	106.3	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	LEX	106.6	106.7	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	LEX	107.1	107.3	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	LEX	109.4	111.2	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	LEX	111.3	117.4	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.

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Geologic Formation/ Unit	Facility	Begin MP	End MP	Period/Era	Primary Lithology	Secondary Lithology	Description
Allegheny and Pottsville Groups, Undivided	LEX	117.5	117.6	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	LEX	117.7	117.9	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	LEX	118.4	118.6	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	LEX	119.3	119.6	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	LEX	119.7	119.8	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	LEX	120.3	121.1	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	LEX	121.6	121.8	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	R-801 Loop	1.8	1.8	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	R-801 Loop	3.8	4.0	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	R-801 Loop	4.4	4.5	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville	R-801 Loop	6.0	6.4	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine

APPENDIX F
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Geologic Formation/ Unit	Facility	Begin MP	End MP	Period/Era	Primary Lithology	Secondary Lithology	Description
Groups, Undivided							fossils.
Allegheny and Pottsville Groups, Undivided	R-801 Loop	8.1	8.2	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	R-801 Loop	9.4	11.5	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	R-801 Loop	11.8	12.1	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	R-801 Loop	12.3	13.3	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	R-801 Loop	13.5	13.6	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	R-801 Loop	13.8	15.5	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	R-801 Loop	15.6	16.3	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	R-801 Loop	16.4	19.7	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	R-801 Loop	19.7	24.2	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	BM-111 Loop	0.0	0.1	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.

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Geologic Formation/ Unit	Facility	Begin MP	End MP	Period/Era	Primary Lithology	Secondary Lithology	Description
Allegheny and Pottsville Groups, Undivided	Benton Regulator Station	12.8	12.8	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	RS-1286 Regulator Station	21.6	21.6	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	McArthur Regulator Station	24.2	24.2	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	BM-111 Loop Launcher	0.0	0.0	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	Oak Hill Compressor Station	51.50 [a]	51.50 [a]	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	Mainline Valve 9	9.7	10.7	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	R-130 Odorization Site	37.08 [a]	37.08 [a]	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	R-300 / R-500 Odorization Site	88.02 [a]	88.02 [a]	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	R-486 Odorization Site	34.72 [a]	34.72 [a]	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Allegheny and Pottsville Groups, Undivided	R-543 Odorization Site	53.68 [a]	53.68 [a]	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
Black Hand Sandstone	LEX	121.2	121.5	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into

APPENDIX F Geologic Formations by Milepost Crossed by the Leach XPress Project							
Geologic Formation/ Unit	Facility	Begin MP	End MP	Period/Era	Primary Lithology	Secondary Lithology	Description
Member of Cuyahoga Formation							shale and siltstone.
Black Hand Sandstone Member of Cuyahoga Formation	LEX	122.0	123.7	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
Black Hand Sandstone Member of Cuyahoga Formation	LEX	124.0	124.2	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
Black Hand Sandstone Member of Cuyahoga Formation	LEX	124.4	124.6	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
Black Hand Sandstone Member of Cuyahoga Formation	LEX	125.1	125.3	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
Black Hand Sandstone Member of Cuyahoga Formation	LEX	126.1	126.1	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
Black Hand Sandstone Member of Cuyahoga Formation	LEX	127.0	127.1	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
Black Hand Sandstone Member of Cuyahoga Formation	LEX	127.6	128.2	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
Black Hand Sandstone Member of Cuyahoga Formation	LEX	129.1	129.2	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
Black Hand Sandstone	LEX	129.7	131.3	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into

APPENDIX F Geologic Formations by Milepost Crossed by the Leach XPress Project							
Geologic Formation/ Unit	Facility	Begin MP	End MP	Period/Era	Primary Lithology	Secondary Lithology	Description
Member of Cuyahoga Formation							shale and siltstone.
Black Hand Sandstone Member of Cuyahoga Formation	LEX1	0.6	1.2	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
Black Hand Sandstone Member of Cuyahoga Formation	R-801 Loop	0.0	0.5	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
Black Hand Sandstone Member of Cuyahoga Formation	R-801 Loop	0.7	1.0	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
Black Hand Sandstone Member of Cuyahoga Formation	R-801 Loop	1.1	1.7	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
Black Hand Sandstone Member of Cuyahoga Formation	R-801 Loop	2.0	2.4	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
Black Hand Sandstone Member of Cuyahoga Formation	R-801 Loop	3.1	3.6	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
Black Hand Sandstone Member of Cuyahoga Formation	R-801 Loop	4.8	4.9	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
Black Hand Sandstone Member of Cuyahoga Formation	R-801 Loop	5.0	5.2	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
Black Hand Sandstone	R-801 Loop	6.7	6.8	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into

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Geologic Formation/ Unit	Facility	Begin MP	End MP	Period/Era	Primary Lithology	Secondary Lithology	Description
Member of Cuyahoga Formation							shale and siltstone.
Black Hand Sandstone Member of Cuyahoga Formation	R-801 Loop	7.6	7.7	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
Black Hand Sandstone Member of Cuyahoga Formation	R-801 Loop	8.6	9.0	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
Black Hand Sandstone Member of Cuyahoga Formation	R-System RS	0.0	0.0	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
Black Hand Sandstone Member of Cuyahoga Formation	LEX1 receiver	1.2	1.2	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
Black Hand Sandstone Member of Cuyahoga Formation	Crawford CS	0.00 [a]	0.00 [a]	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
Black Hand Sandstone Member of Cuyahoga Formation	Benton CS	5.19 [b]	5.19 [b]	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	LEX	117.4	117.5	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga	LEX	117.6	117.7	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.

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Geologic Formation/ Unit	Facility	Begin MP	End MP	Period/Era	Primary Lithology	Secondary Lithology	Description
Formations, Undivided							
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	LEX	117.9	118.4	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	LEX	118.6	119.3	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	LEX	119.6	119.7	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	LEX	119.8	120.3	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	LEX	121.1	121.2	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	LEX	121.5	121.6	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone;	LEX	121.8	122.0	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and

APPENDIX F Geologic Formations by Milepost Crossed by the Leach XPress Project							
Geologic Formation/ Unit	Facility	Begin MP	End MP	Period/Era	Primary Lithology	Secondary Lithology	Description
Rushville, Logan, and Cuyhoga Formations, Undivided							sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	LEX	123.7	124.0	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	LEX	124.2	124.4	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	LEX	124.6	125.1	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	LEX	125.3	126.1	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	LEX	126.1	127.0	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations,	LEX	127.1	127.6	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.

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Geologic Formation/ Unit	Facility	Begin MP	End MP	Period/Era	Primary Lithology	Secondary Lithology	Description
Undivided							
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	LEX	128.2	129.1	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	LEX	129.2	129.7	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	LEX1	0.0	0.6	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	R-801 Loop	0.5	0.7	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	R-801 Loop	1.0	1.1	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	R-801 Loop	1.7	1.8	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville,	R-801 Loop	1.8	2.0	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.

APPENDIX F Geologic Formations by Milepost Crossed by the Leach XPress Project							
Geologic Formation/ Unit	**Facility**	**Begin MP**	**End MP**	**Period/Era**	**Primary Lithology**	**Secondary Lithology**	**Description**
Logan, and Cuyhoga Formations, Undivided							
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	R-801 Loop	2.4	3.1	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	R-801 Loop	3.6	3.8	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	R-801 Loop	4.0	4.4	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	R-801 Loop	4.5	4.8	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	R-801 Loop	4.9	5.0	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	R-801 Loop	5.2	6.0	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.

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Geologic Formation/ Unit	Facility	Begin MP	End MP	Period/Era	Primary Lithology	Secondary Lithology	Description
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	R-801 Loop	6.4	6.7	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	R-801 Loop	6.8	7.6	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	R-801 Loop	7.7	8.1	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	R-801 Loop	8.2	8.6	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	R-801 Loop	9.0	9.4	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	R-801 Loop	11.5	11.8	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and	R-801 Loop	12.1	12.3	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.

APPENDIX F Geologic Formations by Milepost Crossed by the Leach XPress Project							
Geologic Formation/ Unit	**Facility**	**Begin MP**	**End MP**	**Period/Era**	**Primary Lithology**	**Secondary Lithology**	**Description**
Cuyhoga Formations, Undivided							
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	R-801 Loop	13.3	13.5	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	R-801 Loop	13.6	13.8	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	R-801 Loop	15.5	15.6	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	R-801 Loop	16.3	16.4	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	R-801 Loop	19.7	19.7	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	K-260 RS	0.0	0.0	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.

APPENDIX F
Geologic Formations by Milepost Crossed by the Leach XPress Project

Geologic Formation/ Unit	Facility	Begin MP	End MP	Period/Era	Primary Lithology	Secondary Lithology	Description
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	Mainline Valve 8	122.0	122.0	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
Quaternary Alluvium	LEX	25.6, RR-5	25.6, RR-5	Quaternary	Alluvium	N/A	Alluvial deposits of sand, gravel, silt, and clay.
Quaternary Alluvium	BM-111 Loop	0.1	0.8	Quaternary	Alluvium	N/A	Alluvial deposits of sand, gravel, silt, and clay.
Quaternary Alluvium	BM-111 Loop	2.6	2.9	Quaternary	Alluvium	N/A	Alluvial deposits of sand, gravel, silt, and clay.
Quaternary Alluvium	Ceredo CS	2.9	2.9	Quaternary	Alluvium	N/A	Alluvial deposits of sand, gravel, silt, and clay.
Greene Formation	LEX	0.6	0.6	Permian	Sandstone	Shale	Cyclic sequences of sandstone, shale, red beds, thin limestone, and thin, impure coal.
Greene Formation	LEX	0.8	1.1	Permian	Sandstone	Shale	Cyclic sequences of sandstone, shale, red beds, thin limestone, and thin, impure coal.
Washington Formation	LEX	0.5	0.6	Permian	Sandstone	Shale	Sequences of sandstone, red shale, limestone, and coal.
Washington Formation	LEX	0.6	0.8	Permian	Sandstone	Shale	Sequences of sandstone, red shale, limestone, and coal.
Washington Formation	LEX	1.1	1.2	Permian	Sandstone	Shale	Sequences of sandstone, red shale, limestone, and coal.
Waynesburg Formation	LEX	0.0	0.5	Permian and Pennsylvanian	Sandstone	Shale	Sequences of sandstone, shale, limestone, and coal.
Waynesburg Formation	LEX	1.2	1.6	Permian and Pennsylvanian	Sandstone	Shale	Sequences of sandstone, shale, limestone, and coal.

[a] Milepost is associated with Columbia's existing Line R-501.
[b] Milepost is associated with Columbia's existing Line R-515.
Source: USGS, 2005a-g.

APPENDIX G
Areas of Shallow Depth to Bedrock Crossed by the Leach XPress Project

APPENDIX G – AREAS OF SHALLOW DEPTH TO BEDROCK CROSSED BY THE LEACH XPRESS PROJECT

APPENDIX G Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]		
Approximate Start (MP)	**Approximate End (MP)**	**Length Crossed by Centerline (feet)**
LEX		
Marshall County, WV		
0.0	0.0	126
Approximate Percent of Pipeline Crossing Length		*0.01%*
Greene County, PA		
0.6	0.6	205
0.6	0.7	185
Approximate Percent of Pipeline Crossing Length		*0.05%*
Marshall County, WV		
2.1	2.1	76
2.1	2.2	326
2.2	2.2	87
2.2	2.3	183
2.4	2.4	127
2.4	2.5	324
2.5	2.5	184
2.6	2.7	399
2.7	2.9	801
2.9	3.0	536
3.0	3.1	661
3.1	3.2	338
3.2	3.2	299
3.2	3.3	333
3.3	3.4	630
3.4	3.4	123
3.5	3.5	128
3.5	3.5	138
3.5	3.6	481
3.6	3.7	555
3.7	3.8	140
3.8	3.8	50
3.8	3.8	128
3.8	3.8	189
3.9	4.0	543
4.0	4.0	73
4.0	4.1	120
4.1	4.1	184
4.1	4.1	169
4.1	4.2	155
4.2	4.2	355
4.3	4.4	792
4.4	4.4	204
4.4	4.5	370
4.5	4.5	119

APPENDIX G – AREAS OF SHALLOW DEPTH TO BEDROCK CROSSED BY THE LEACH XPRESS PROJECT

APPENDIX G Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]		
Approximate Start (MP)	**Approximate End (MP)**	**Length Crossed by Centerline (feet)**
4.5	4.5	44
4.5	4.6	347
4.6	4.7	210
4.7	4.7	228
4.7	4.7	153
4.8	4.8	148
4.8	4.8	199
4.9	5.0	701
5.0	5.1	199
5.1	5.1	120
5.1	5.3	864
5.3	5.3	140
5.3	5.4	150
5.4	5.4	50
5.4	5.4	128
5.4	5.5	291
5.5	5.5	155
5.5	5.5	196
5.5	5.6	208
5.6	5.6	111
5.6	5.6	191
5.6	5.7	110
5.7	5.8	553
5.8	5.8	121
6.0	6.0	156
6.1	6.1	132
6.1	6.2	122
6.2	6.2	165
6.2	6.2	189
6.3	6.4	361
6.4	6.5	260
6.5	6.5	316
6.5	6.6	214
6.6	6.6	44
6.6	6.6	306
6.6	6.8	877
6.8	6.9	520
7.0	7.0	123
7.0	7.1	98
7.1	7.1	281
7.1	7.2	376
7.2	7.3	730
7.3	7.3	50
7.3	7.4	338
7.4	7.4	207

APPENDIX G – AREAS OF SHALLOW DEPTH TO BEDROCK CROSSED BY THE LEACH XPRESS PROJECT

APPENDIX G Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]		
Approximate Start (MP)	**Approximate End (MP)**	**Length Crossed by Centerline (feet)**
7.4	7.5	161
7.5	7.5	161
7.5	7.6	104
7.6	7.7	904
7.7	7.7	23
7.8	7.8	198
7.9	7.9	72
8.0	8.0	67
8.0	8.0	174
8.0	8.1	290
8.2	8.2	442
8.3	8.3	26
8.3	8.4	161
8.4	8.4	323
8.5	8.5	177
8.6	8.6	208
8.6	8.7	336
8.6	8.7	233
8.7	8.7	79
8.7	8.7	94
8.7	8.8	189
8.7	8.9	372
8.8	9.0	208
9.0	9.0	28
9.0	9.1	313
9.1	9.1	101
9.1	9.2	103
9.2	9.2	54
9.2	9.2	136
9.2	9.3	184
9.7	9.8	518
9.8	9.9	281
9.9	10.0	461
10.0	10.0	396
10.0	10.1	498
10.1	10.2	214
10.2	10.2	76
10.2	10.2	153
10.2	10.3	427
10.3	10.4	474
10.6	10.6	46
10.6	10.6	112
10.6	10.6	42
10.6	10.6	108
10.7	10.8	436

APPENDIX G – AREAS OF SHALLOW DEPTH TO BEDROCK CROSSED BY THE LEACH XPRESS PROJECT

APPENDIX G Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]		
Approximate Start (MP)	**Approximate End (MP)**	**Length Crossed by Centerline (feet)**
10.8	10.9	436
10.9	11.0	268
11.0	11.0	187
11.1	11.1	194
11.2	11.3	268
11.3	11.3	251
11.3	11.4	163
11.4	11.5	453
11.5	11.6	131
11.6	11.6	112
11.6	11.6	204
11.6	11.6	65
11.6	11.7	148
11.8	11.8	66
11.8	11.8	95
11.8	11.8	254
11.8	11.9	99
11.9	11.9	278
12.0	12.0	10
12.0	12.0	316
12.1	12.1	196
12.1	12.1	100
12.1	12.2	297
12.2	12.3	709
12.3	12.4	228
12.4	12.4	339
12.4	12.5	129
12.5	12.5	261
12.8	12.8	180
12.8	12.8	31
12.9	12.9	157
12.9	12.9	207
12.9	13.0	341
13.0	13.0	123
13.0	13.1	217
13.1	13.1	151
13.1	13.1	86
13.1	13.1	60
13.1	13.1	179
13.1	13.2	67
13.2	13.2	162
13.2	13.3	64
13.3	13.3	123
13.3	13.3	117
13.4	13.4	198

APPENDIX G – AREAS OF SHALLOW DEPTH TO BEDROCK CROSSED BY THE LEACH XPRESS PROJECT

APPENDIX G Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]		
Approximate Start (MP)	Approximate End (MP)	Length Crossed by Centerline (feet)
13.4	13.4	102
13.5	13.5	160
13.7	13.7	174
13.7	13.7	52
13.7	13.7	199
13.7	13.8	208
13.8	13.8	341
13.9	13.9	80
14.0	14.0	147
14.1	14.1 (RR-2)	108
14.1 (RR-2)	14.2 (RR-2)	213
14.2 (RR-2)	14.2 (RR-2)	216
14.3 (RR-2)	14.4 (RR-2)	468
14.5 (RR-2)	14.5 (RR-2)	132
14.6 (RR-2)	14.6 (RR-2)	165
14.6 (RR-2)	14.6 (RR-2)	47
14.6 (RR-2)	14.8 (RR-2)	943
14.8 (RR-2)	14.8 (RR-2)	87
14.8 (RR-2)	14.8 (RR-2)	111
14.8 (RR-2)	14.8 (RR-2)	87
14.8 (RR-2)	14.9 (RR-2)	389
14.9 (RR-2)	15.0 (RR-2)	566
15.0 (RR-2)	15.2 (RR-2)	939
15.8 (RR-2)	15.8 (RR-2)	110
15.8 (RR-2)	15.8 (RR-2)	52
15.8 (RR-2)	15.1	267
15.1	15.1	88
15.1	15.2	94
15.2	15.2	222
15.3	15.4	128
15.4	15.4	126
15.4	15.5	442
15.5	15.5	163
15.6	15.6	117
15.6	15.6	150
15.6	15.6	77
15.6	15.7	224
15.7	15.7	117
15.8	15.8	261
15.8	15.8	100
15.8	15.9	134
15.9	15.9	331
16.3	16.3	144
16.3	16.3	110
16.3	16.3	80

APPENDIX G Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]		
Approximate Start (MP)	**Approximate End (MP)**	**Length Crossed by Centerline (feet)**
16.3	16.4	301
16.4	16.4	127
16.4	16.5	285
16.5	16.5	112
16.5	16.6	277
16.6	16.6	310
16.6	16.7 (RR-3)	264
16.7 (RR-3)	16.7 (RR-3)	134
16.7 (RR-3)	16.7 (RR-3)	134
17.1 (RR-3)	17.2	264
17.2	17.2	441
17.3	17.3	93
17.3	17.3	326
17.3	17.4	108
17.4	17.4	99
17.4	17.4	86
17.4	17.4	181
17.4	17.4	29
17.5	17.5	79
17.5	17.6	562
17.6	17.7	282
17.7	17.7	76
17.7	17.7	167
17.7	17.7	61
17.7	17.8	199
17.8	17.8	94
17.8	17.9	642
17.9	17.9	65
17.9	18.0	127
18.0	18.0	109
18.0	18.0	86
18.0	18.0	170
18.0	18.2	879
18.2	18.2	82
18.2	18.2	108
18.2	18.3	270
18.3	18.3	227
18.3	18.4	163
18.4	18.4	66
18.4	18.4	132
18.4 (RR-4)	18.5 (RR-4)	233
18.5 (RR-4)	18.5 (RR-4)	260
18.5 (RR-4)	18.6 (RR-4)	79
18.6 (RR-4)	18.6 (RR-4)	85
18.6 (RR-4)	18.6 (RR-4)	112

APPENDIX G – AREAS OF SHALLOW DEPTH TO BEDROCK CROSSED BY THE LEACH XPRESS PROJECT

APPENDIX G Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]		
Approximate Start (MP)	**Approximate End (MP)**	**Length Crossed by Centerline (feet)**
18.6 (RR-4)	18.7	658
18.8	18.8	90
18.8	18.8	137
18.8	18.9	230
18.9	19.0	630
19.0	19.0	73
19.0	19.0	90
19.0	19.0	205
19.0	19.1	41
19.1	19.1	137
19.1	19.1	283
19.2	19.3	233
19.3	19.3	46
19.3	19.3	127
19.3	19.3	188
19.3	19.4	247
19.4	19.5	468
19.5	19.6	730
19.6	19.7	283
19.7	19.7	396
19.7	19.8	230
19.8	19.8	265
19.8	19.9	116
19.9	20.0	554
20.0	20.0	91
20.0	20.1	559
20.1	20.2	364
20.2	20.2	383
20.2	20.4	637
20.4	20.5	956
20.6	20.8	836
20.8	20.9	420
20.9	21.0	531
21.3	21.3	118
21.6	21.7	920
21.7	21.8	58
21.8	21.8	350
21.8	21.9	180
21.9	21.9	228
21.9	22.0	620
22.0	22.1	316
22.1	22.1	406
22.1	22.3	909
22.3	22.3	104
22.3	22.4	162

APPENDIX G Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]		
Approximate Start (MP)	**Approximate End (MP)**	**Length Crossed by Centerline (feet)**
22.4	22.5	454
22.5	22.5	218
22.5	22.5	164
22.5	22.5	57
22.5	22.6	482
22.6	22.6	31
22.6	22.7	225
22.7	22.8	601
22.8	22.8	180
22.8	22.9	172
22.9	22.9	127
22.9	23.0	445
23.0	23.0	137
23.0	23.2	1,004
23.4	23.5	599
23.5	23.6	240
23.6	23.6	169
23.6	23.6	15
23.6	23.7	564
23.7	23.7	92
23.7	23.8	234
23.8	23.8	82
23.8	23.8	59
23.8	24.0	691
24.0	24.1	649
24.1	24.1	118
24.1	24.2	91
24.2	24.3	631
24.3	24.4	442
24.4	24.4	106
24.4	24.4	113
24.4	24.4	97
24.4	24.5	554
24.5	24.6	541
24.6	24.7	255
24.7	24.7	250
24.9	24.9	77
25.0	25.0	163
25.0	25.0	32
25.0	25.1	318
Approximate Percent of Pipeline Crossing Length		*10%*
Monroe County, OH		
25.8 (RR-5)	25.9 (RR-5)	421
25.9 (RR-5)	25.9 (RR-5)	144
26.0 (RR-5)	26.1 (RR-5)	735

APPENDIX G Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]		
Approximate Start (MP)	**Approximate End (MP)**	**Length Crossed by Centerline (feet)**
26.1 (RR-5)	26.3 (RR-5)	953
26.3 (RR-5)	26.3 (RR-5)	215
26.3 (RR-5)	26.4 (RR-5)	224
26.4 (RR-5)	26.5 (RR-5)	631
26.5 (RR-5)	26.6 (RR-5)	503
26.6 (RR-5)	26.8 (RR-5)	1,288
26.8 (RR-5)	27.0 (RR-5)	595
27.0 (RR-5)	27.0 (RR-5)	319
27.0 (RR-5)	27.0	1,158
27.0	27.0	64
27.0	27.1	270
27.1	27.2	457
27.2	27.2	143
27.2	27.2	111
27.2	27.3	227
27.3	27.4	597
27.4	27.4	86
27.4	27.4	280
27.4	27.5	225
27.5	27.6	512
27.6	27.6	116
27.6	27.6	158
27.6	27.7	181
27.7	27.7	136
27.7	27.7	70
27.7	27.8	296
27.8	27.8	90
27.8	27.8	59
27.8	27.8	106
27.8	27.9	187
27.9	27.9	152
27.9	27.9	65
27.9	27.9	90
27.9	28.0	366
28.0	28.1	642
28.1	28.2	191
28.2	28.3	554
28.3	28.5	1,216
28.5	28.6	182
28.6	28.6	85
28.6	28.7	147
28.7	28.7	164
28.7	28.7	240
28.7	28.8	628
28.8	28.9	336

APPENDIX G Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]		
Approximate Start (MP)	**Approximate End (MP)**	**Length Crossed by Centerline (feet)**
28.9	28.9	139
28.9	29.0	403
29.0	29.1	367
29.1	29.1	36
29.1	29.1	254
29.1	29.3	644
29.3	29.3	93
29.3	29.4	477
29.4	29.4	114
29.4	29.4	152
29.4	29.4	88
29.4	29.5	288
29.5	29.5	96
29.5	29.5	61
29.5	29.7	779
29.7	29.7	206
29.7	29.7	132
29.7	29.8	391
29.8	29.8	219
29.8	29.9	370
29.9	29.9	120
29.9	30.0	143
30.0	30.1	474
30.1	30.1	92
30.1	30.2	429
30.2	30.2	133
30.2	30.4	978
30.4	30.4	221
30.5	30.5	411
30.7	30.7	137
30.7	30.8	584
30.8	31.0	728
31.0	31.0	330
31.0	31.1	229
31.1	31.1	296
31.1	31.2	181
31.2	31.2	232
31.2	31.3	209
31.3	31.3	456
31.3	31.4	153
31.4	31.4	179
31.4	31.5	160
31.5	31.5	177
31.5	31.5	307
31.5	31.6	145

APPENDIX G – AREAS OF SHALLOW DEPTH TO BEDROCK CROSSED BY THE LEACH XPRESS PROJECT

APPENDIX G Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]		
Approximate Start (MP)	**Approximate End (MP)**	**Length Crossed by Centerline (feet)**
31.6	31.6	187
31.6	31.7	209
31.7	31.7	185
31.7	31.7	102
31.7	31.8	170
31.8	31.8	172
31.8	31.9	170
31.9	31.9	474
31.9	32.0	534
32.0	32.1	475
32.1	32.2	377
32.2	32.3	136
32.3	32.3	167
32.3	32.4	200
32.4	32.4	239
32.4	32.5	721
32.5	32.6	364
32.6	32.7	369
32.7	32.8	620
32.8	32.9	558
32.9	32.9	122
32.9	33.0	99
33.0	33.1	790
33.1	33.1	71
33.1	33.2	173
33.2	33.2	137
33.2	33.2	83
33.2	33.2	134
33.2	33.3	140
33.3	33.3	350
33.3	33.4	167
33.4	33.4	115
33.5	33.6	437
33.6	33.6	74
33.6	33.6	205
33.6	33.7	395
33.7	33.7	144
33.7	33.7	87
33.7	34.1	2,099
34.1	34.2	213
34.2	34.2	291
34.2	34.2	17
34.3	34.3	224
34.3	34.4	253
34.4	34.4	95

APPENDIX G – AREAS OF SHALLOW DEPTH TO BEDROCK CROSSED
BY THE LEACH XPRESS PROJECT

APPENDIX G Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]		
Approximate Start (MP)	Approximate End (MP)	Length Crossed by Centerline (feet)
34.4	34.4	50
34.4	34.4	96
34.4	34.5	351
34.5	34.5	129
34.5	34.6	204
34.6	34.6	169
34.6	34.7	153
34.7	34.7	260
34.7	34.7	139
34.8	34.8	127
34.8	34.9	349
34.9	34.9	50
34.9	34.9	251
34.9	34.9	91
34.9	35.0	81
35.0	35.0	112
35.0	35.1	457
35.1	35.1	111
35.1	35.2	115
35.2	35.2	305
35.3	35.3	111
35.3	35.3	172
35.3	35.4	250
35.4	35.4	224
35.4	35.5	538
35.5	35.6	467
35.6	35.7	300
35.7	35.7	256
35.7	35.8	138
35.8	35.8	395
35.8	35.9	380
35.9	36.0	670
36.0	36.0	80
36.0	36.1	91
36.1	36.1	147
36.1	36.1	146
36.1	36.2	341
36.2	36.2	115
36.2	36.3	271
36.3	36.4	620
36.4	36.4	101
36.4	36.4	94
36.4	36.4	76
36.5	36.5	133
36.5	36.6	190

APPENDIX G Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]		
Approximate Start (MP)	**Approximate End (MP)**	**Length Crossed by Centerline (feet)**
36.6	36.6	163
36.6	36.6	274
36.6	36.7	165
36.7	36.7	180
36.7	36.7	193
36.7	36.8	54
36.8	36.9	654
36.9	36.9	105
36.9	37.0	330
37.0	37.0	188
37.0	37.1	391
37.1	37.1	217
37.1	37.2	295
37.2	37.3	387
37.3	37.3	228
37.3	37.3	128
37.3	37.5	951
37.5	37.6	189
37.6	37.6	224
37.6	37.6	264
37.6	37.8	589
37.8	37.8	143
37.8	37.8	294
37.8	37.9	366
37.9	38.0	381
38.0	38.0	112
38.0	38.0	172
38.0	38.1	313
38.1	38.1	149
38.1	38.2	175
38.2	38.2	179
38.2	38.2	90
38.2	38.3	224
38.3	38.3	207
38.3	38.4	349
38.4	38.4	234
38.4	38.4	238
38.4	38.5	327
38.5	38.6	487
38.6	38.6	239
38.6	38.7	232
38.7	38.7	111
38.7	38.7	112
38.7	38.8	233
38.8	38.8	262

APPENDIX G – AREAS OF SHALLOW DEPTH TO BEDROCK CROSSED BY THE LEACH XPRESS PROJECT

APPENDIX G
Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]

Approximate Start (MP)	Approximate End (MP)	Length Crossed by Centerline (feet)
38.8	38.9	364
38.9	38.9	213
38.9	39.0	399
39.0	39.1	274
39.1	39.2	494
39.2	39.2	127
39.2	39.2	3
39.2	39.2	276
39.2	39.3	247
39.3	39.3	44
39.3	39.3	107
39.3	39.3	81
39.3	39.3	122
39.3	39.4	123
39.4	39.5	492
39.5	39.6	281
39.6	39.6	142
39.6	39.6	197
39.6	39.7	242
39.7	39.7	203
39.7	39.7	86
39.7	39.8	437
39.8	39.8	194
39.8	39.9	127
39.9	39.9	121
39.9	39.9	301
39.9	40.0	102
40.0	40.1	972
40.1	40.3	586
40.3	40.4	709
40.4	40.5	434
40.5	40.6	215
40.6	40.6	177
40.6	40.6	3
40.6	40.6	59
40.6	40.6	200
40.6	40.7	146
40.7	40.7	205
40.7	40.8	226
40.8	40.9	374
40.9	40.9	356
40.9	41.1	696
41.1	41.1	146
41.1	41.1	76
41.1	41.1	74

APPENDIX G – AREAS OF SHALLOW DEPTH TO BEDROCK CROSSED BY THE LEACH XPRESS PROJECT

APPENDIX G Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]		
Approximate Start (MP)	**Approximate End (MP)**	**Length Crossed by Centerline (feet)**
41.1	41.2	246
41.2	41.2	369
41.2	41.4	784
41.4	41.4	124
41.4	41.5	263
41.5	41.5	154
41.5	41.6	322
41.6	41.6	115
41.6	41.7	234
41.7	41.7	173
41.7	41.7	71
41.7	41.7	241
41.7	41.8	75
41.8	41.8	74
41.8	41.9	502
41.9	41.9	112
41.9	41.9	241
41.9	42.0	310
42.0	42.0	64
42.0	42.0	163
42.0	42.1	294
42.1	42.2	373
42.2	42.3	492
42.3	42.3	319
42.3	42.5	1,077
42.5	42.5	48
42.5	42.6	49
42.6	42.6	515
42.6	42.7	172
42.7	42.7	138
42.7	42.7	205
42.7	42.8	40
42.8	42.8	122
42.8	42.8	50
42.8	42.9	496
42.9	42.9	202
42.9	42.9	150
42.9	43.0	182
43.0	43.0	177
43.0	43.0	101
43.0	43.1	391
43.1	43.2	620
43.2	43.2	24
43.2	43.3	138
43.3	43.3	484

APPENDIX G
Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]

Approximate Start (MP)	Approximate End (MP)	Length Crossed by Centerline (feet)
43.3	43.4	492
43.4	43.4	11
43.4	43.5	126
43.5	43.5	53
43.5	43.5	131
43.5	43.5	168
43.5	43.6	224
43.6	43.6	63
43.6	43.6	268
43.6	43.7	481
43.7	43.8	444
43.8	43.8	110
43.8	43.9	259
43.9	43.9	120
43.9	43.9	218
43.9	44.0	214
44.0	44.0	55
44.0	44.0	118
44.0	44.1	104
44.1	44.1	200
44.1	44.2	753
44.2	44.3	345
44.3	44.4	406
44.4	44.4	151
44.4	44.5	167
44.5	44.5	76
44.5	44.5	153
44.5	44.5	161
44.5	44.5	84
44.5	44.6	552
44.6	44.7	85
44.7	44.7	349
44.7	44.8	127
44.8	44.9	670
44.9	44.9	99
44.9	44.9	245
44.9	45.0	454
45.0	45.1	278
45.1	45.1	186
45.2	45.2	202
45.2	45.3	279
45.3	45.4	655
45.4	45.4	54
45.4	45.4	214
45.4	45.5	213

APPENDIX G
Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]

Approximate Start (MP)	Approximate End (MP)	Length Crossed by Centerline (feet)
45.5	45.5	4
45.5	45.5	98
45.5	45.6	635
45.6	45.7	206
45.7	45.8	918
45.8	45.9	161
45.9	45.9	282
45.9	45.9	137
45.9	45.9	50
45.9	46.0	75
46.0	46.0	169
46.0	46.0	154
46.0	46.1	455
46.1	46.2	300
46.2	46.2	124
46.2	46.3	376
46.3	46.3	103
46.3	46.3	163
46.3	46.4	248
46.4	46.4	191
46.4	46.5	464
46.5	46.8	1,496
46.8	46.8	314
46.8	46.9	461
46.9	47.0	438
47.0	47.1	397
47.1	47.1	184
47.1	47.2	386
47.2	47.2	167
47.2	47.3	289
47.3	47.3	141
47.3	47.3	164
47.3	47.4	145
47.4	47.4	94
47.4	47.4	347
47.4	47.5	103
47.5	47.5	209
47.5	47.5	294
47.5	47.6	148
47.6	47.7	538
47.7	47.8	687
47.8	47.8	212
47.8	48.0	709
48.0	48.0	161
48.0	48.1	574

APPENDIX G Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]		
Approximate Start (MP)	Approximate End (MP)	Length Crossed by Centerline (feet)
48.1	48.2	242
48.2	48.2	374
48.2	48.3	168
48.3	48.3	349
48.3	48.4	127
48.4	48.5	301
48.5	48.5	90
48.5	48.6	796
48.6	48.7	354
48.7	48.8	446
48.9	48.9	213
49.0	49.1	231
49.1	49.1	41
49.1	49.1	356
49.1	49.2	247
49.3	49.3	175
49.3	49.4	229
49.5	49.5	172
49.6	49.6	206
49.6	49.7	147
49.7	49.7	106
49.7	49.7	78
49.7	49.8	697
49.8	49.9	162
49.9	49.9	379
50.1	50.1	162
50.1	50.1	138
50.1	50.2	166
50.2	50.2	15
50.2	50.2	359
50.2	50.3	182
50.3	50.3	66
50.3	50.3	156
50.4	50.5	216
50.5	50.5	114
50.5	50.5	72
50.5	50.6	547
50.6	50.7 (RR-6)	90
50.7 (RR-6)	50.7 (RR-6)	165
50.7 (RR-6)	50.8 (RR-6)	148
50.8 (RR-6)	50.9 (RR-6)	143
51.5	51.6	402
51.6	51.6	275
51.6	51.6	156
51.6	51.6	23

APPENDIX G
Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]

Approximate Start (MP)	Approximate End (MP)	Length Crossed by Centerline (feet)
51.6	51.7	105
51.8	51.8	66
51.8	51.9	141
51.9	52.0	858
52.0	52.1	307
52.1	52.1	220
52.1	52.2	337
52.2	52.2	27
52.2	52.3	379
52.5	52.5	196
52.5	52.5	121
52.6	52.6	96
52.6	52.8	989
52.9	52.9	116
52.9	53.0	485
53.0	53.1	125
53.1	53.1	338
53.1	53.1	34
53.1	53.1	55
53.1	53.1	10
Approximate Percent of Pipeline Crossing Length		*15%*
Noble County, OH		
53.1	53.2	119
53.2	53.2	84
53.2	53.2	106
53.2	53.3	452
53.4	53.4	196
53.4	53.4	6
53.4	53.5	192
53.5	53.5	164
53.5	53.5	200
53.6	53.8	1,344
53.8	53.8	120
53.8	53.9	397
53.9	54.0	574
54.0	54.2	729
54.2	54.4	1,352
54.4	54.5 (RR-7)	474
54.5 (RR-7)	55.1 (RR-7)	2,998
55.1 (RR-7)	55.1 (RR-7)	171
55.1 (RR-7)	55.2 (RR-7)	616
55.2 (RR-7)	55.2 (RR-7)	136
55.5 (RR-7)	55.6 (RR-7)	309
55.6 (RR-7)	55.6 (RR-7)	264
55.6 (RR-7)	55.6 (RR-7)	246

APPENDIX G – AREAS OF SHALLOW DEPTH TO BEDROCK CROSSED BY THE LEACH XPRESS PROJECT

APPENDIX G Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]		
Approximate Start (MP)	**Approximate End (MP)**	**Length Crossed by Centerline (feet)**
55.6 (RR-7)	55.7 (RR-7)	293
55.7 (RR-7)	55.8 (RR-7)	688
55.9 (RR-7)	56.0 (RR-7)	561
56.0 (RR-7)	55.9	308
55.9	55.9	390
57.1	57.3	716
57.4	57.4	229
57.4	57.5	384
57.6	57.7	318
58.0	58.0	241
58.0	58.0	95
58.2	58.3	524
58.3	58.3	291
58.3	58.4	689
58.4	58.5	232
58.5	58.7	1,316
58.9	59.1	893
59.2	59.4	701
59.4	59.5	553
60.7	60.9	949
62.0	62.2	978
63.5	63.6	219
63.6	63.7	635
64.6	64.6	141
64.8	64.9	563
65.0	65.0	16
65.0	65.0	196
65.0	65.0	118
65.0	65.1	201
65.1	65.1	222
65.1	65.2	581
65.2	65.3	135
65.3	65.3	76
65.3	65.3	244
65.3	65.4	301
65.5	65.6	331
65.7	65.7	451
65.8	65.8	255
66.1	66.2	158
66.2	66.3	811
66.3	66.5	1,090
66.5	66.6	274
66.6	66.6	303
66.6	66.6	56
66.6	66.8	842

APPENDIX G
Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]

Approximate Start (MP)	Approximate End (MP)	Length Crossed by Centerline (feet)
66.8	66.8	241
67.1	67.1	115
67.1	67.2	586
67.4	67.5	454
67.5	67.6	508
67.6	67.7	299
67.7	67.7	203
68.0	68.1	797
68.2	68.2	134
68.3	68.4	272
68.6	68.6	199
68.7	68.7	358
69.2	69.3	522
69.4	69.4	159
69.4	69.5	361
70.4	70.6	797
70.6	70.6	125
70.7	70.7	72
71.0	71.4	1,923
71.4	71.5	149
71.7	71.9	944
72.0	72.1	779
72.2	72.5	1,722
72.6	72.9	1,329
73.3	73.3	206
73.6	73.7	609
73.8	73.9	347
74.0	74.3	1,585
74.3	74.4	331
74.4	74.5	756
74.5	74.6	452
74.6	75.0	2,171
75.0	75.0	240
75.3	75.4	426
75.4	75.6	861
76.0	76.2	934
Approximate Percent of Pipeline Crossing Length		*6%*
Muskingum County, OH		
76.2	76.2	54
76.2	76.3	485
76.3	76.4	76
76.4	76.5	517
76.5	76.5	476
76.5	76.6	205
76.6	76.7	447

APPENDIX G
Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]

Approximate Start (MP)	Approximate End (MP)	Length Crossed by Centerline (feet)
76.7	76.7	432
76.7	76.8	177
76.8	77.1	1,454
77.1	77.3	1,057
77.4	77.5	782
77.6	77.8	1,203
77.8	78.0	671
78.0	78.1	344
78.1	78.2	398
78.2	78.2	83
78.2	78.2	136
78.2	78.3	448
78.3	78.4	315
78.4	78.4	161
78.4	78.5	351
78.5	78.8	1,679
78.8	79.0	903
79.0	79.0	259
79.0	79.1	632
79.1	79.2	414
81.6	81.6	122
81.6	81.6	149
81.9	81.9	88
82.2	82.2	272
83.0	83.1	130
83.1	83.2	570
83.2	83.2	231
84.0	84.0	207
Approximate Percent of Pipeline Crossing Length		*2%*
Morgan County, OH		
85.0	85.1	710
85.1	85.2	289
85.2	85.3	429
85.3	85.5	1270
85.5	85.7	778
86.3	86.4	325
86.4	86.5	284
86.6	86.6	34
86.9	86.9	180
86.9	86.9	81
87.1	87.1	147
87.2	87.3	266
87.3	87.4	330
87.5	87.5	185
87.6	87.7	220

APPENDIX G
Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]

Approximate Start (MP)	Approximate End (MP)	Length Crossed by Centerline (feet)
87.9	87.9	93
88.0	88.0	161
88.2	88.2	172
88.4	88.5	207
88.9	89.0	434
89.0	89.0	168
89.2	89.3	557
90.1	90.1	374
90.1	90.3	1,072
90.3	90.4	521
90.4	90.7	1,153
90.8	91.0	1,046
91.1	91.1	223
91.1	91.2	398
91.3	91.3	305
91.5	91.6	472
91.7	91.8	202
91.8	91.9	179
92.0	92.1	308
92.2	92.2	152
92.4	92.4	129
92.7	92.7	246
92.7	92.7	79
92.7	92.9	996
92.9	92.9	104
93.0	93.1	476
93.1	93.2	400
93.2	93.2	161
93.2	93.2	92
93.2	93.3	702
93.5	93.5	156
93.6	93.7	219
93.7	93.8	847
93.9	94.0	617
94.1	94.1	159
94.2	94.2	172
94.6	94.6	172
94.6	94.8	781
94.8	94.9	240
94.9	95.0	771
95.2	95.2	329
95.4	95.5	303
95.5	95.6	513
95.8	95.8	437
95.9	95.9	148

APPENDIX G
Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]

Approximate Start (MP)	Approximate End (MP)	Length Crossed by Centerline (feet)
96.0	96.0	313
96.2	96.2	155
96.3	96.3	290
96.6	96.6	150
96.6	96.8	970
96.8	96.8	202
96.9	97.0	457
97.0	97.1	328
97.1	97.1	241
97.1	97.3	754
97.4	97.4	91
Approximate Percent of Pipeline Crossing Length		*3%*
Perry County, OH		
97.5	97.5	139
97.6	97.6	47
97.7	97.7	126
97.7	97.8	670
97.8	97.9	136
97.9	97.9	88
97.9	98.0	573
98.0	98.1	362
98.1	98.1	107
98.1	98.1	170
98.1	98.2	555
98.2	98.3	128
98.3	98.3	144
98.4	98.4	146
98.4	98.4	360
99.4	99.5	772
99.6	99.7	219
99.7	99.7	241
100.1	100.2	306
100.4	100.5	135
100.5	100.5	212
100.5	100.6	313
100.6	100.6	174
100.6	100.7	345
100.8	100.8	159
101.3	101.4	140
101.5	101.7	928
101.8	102.0	541
102.0	102.2	865
102.2	102.3	75
102.4	102.5	42
102.5	102.7	463

APPENDIX G
Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]

Approximate Start (MP)	Approximate End (MP)	Length Crossed by Centerline (feet)
103.0	103.1	199
103.3	103.5	760
103.5	103.5	147
103.5	103.5	38
103.5	103.6	376
103.6	103.6	176
103.8	103.9	96
104.3	104.4	230
104.5	104.5	166
104.5	104.7	883
104.7	104.7	97
105.0	105.2	464
105.1	105.2	32
105.1	105.2	181
105.2	105.3	622
105.3	105.4	229
105.3	105.4	203
105.4	105.5	241
105.4	105.5	225
105.5	105.5	111
105.5	105.6	257
105.5	105.7	397
105.6	105.7	365
105.7	105.8	283
105.7	105.8	262
105.8	105.9	182
105.8	105.9	426
105.9	106.0	183
105.9	106.0	263
106.0	106.1	208
106.0	106.1	238
106.1	106.2	622
106.2	106.3	445
106.3	106.5	1,131
106.5	106.6	317
106.7	106.7	120
106.7	106.8	182
106.7	106.8	161
106.7	106.9	293
106.8	106.9	498
106.9	107.0	80
106.9	107.1	642
107.0	107.1	206
107.1	107.2	155
107.1	107.3	634

APPENDIX G – AREAS OF SHALLOW DEPTH TO BEDROCK CROSSED BY THE LEACH XPRESS PROJECT

APPENDIX G Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]		
Approximate Start (MP)	**Approximate End (MP)**	**Length Crossed by Centerline (feet)**
107.2	107.3	57
107.2	107.3	90
107.3	107.4	327
107.3	107.4	200
107.7	108.1	1,714
108.1	108.2	421
108.2	108.3	37
108.2	108.3	160
108.2	108.3	283
108.3	108.3	63
108.3	108.5	891
108.5	108.5	88
108.5	108.6	244
108.5	108.6	79
108.6	108.6	83
108.6	108.6	67
108.6	108.7	501
108.7	108.9	646
109.0	109.1	199
109.1	109.1	71
109.1	109.2	119
109.1	109.2	78
109.1	109.2	339
109.2	109.3	347
109.3	109.4	339
109.3	109.4	285
110.1	110.3	774
110.2	110.4	586
110.5	110.6	464
110.6	110.6	128
110.7	110.8	163
110.8	110.9	390
110.8	110.9	304
112.1	112.3	504
112.3	112.4	394
112.3	112.5	506
112.4	112.7	1,303
113.1	113.2	605
113.6	114.1	2,266
114.0	114.3	977
114.3	114.4	485
114.4	114.5	394
114.5	114.6	436
114.6	114.7	247
114.6	115.2	2,690

APPENDIX G – AREAS OF SHALLOW DEPTH TO BEDROCK CROSSED BY THE LEACH XPRESS PROJECT

APPENDIX G Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]		
Approximate Start (MP)	**Approximate End (MP)**	**Length Crossed by Centerline (feet)**
115.1	115.2	160
115.1	115.3	779
115.3	115.4	286
115.3	115.4	184
116.0	116.3	1,418
116.2	116.4	624
116.4	116.5	360
116.6	117.0	1,862
117.1	117.4	1,283
117.5	117.7	457
117.7	117.9	814
117.8	117.9	202
117.9	118.0	171
Approximate Percent of Pipeline Crossing Length		*6%*
Fairfield County, OH		
118.2	118.3	131
118.3	118.6	1,297
118.7	118.8	218
119.1	119.4	1,212
119.3	119.6	1,158
119.7	119.8	231
119.8	119.9	48
Approximate Percent of Pipeline Crossing Length		*0.5%*
Hocking County, OH		
119.8	119.9	151
120.2	120.3	502
120.3	120.7	1,787
120.6	120.7	6
120.6	120.7	45
120.6	120.9	990
120.8	121.1	1,002
121.0	121.3	1,212
121.3	121.4	75
121.3	121.4	276
121.4	121.5	303
121.5	121.6	470
121.8	122.0	352
122.0	122.1	137
123.7	123.9	710
123.8	123.9	183
123.9	124.0	601
124.1	124.2	358
124.2	124.3	337
124.2	124.4	705

APPENDIX G Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]		
Approximate Start (MP)	**Approximate End (MP)**	**Length Crossed by Centerline (feet)**
124.5	124.7	803
124.7	124.8	493
124.8	125.0	840
124.9	125.0	376
125.0	125.1	545
125.2	125.4	816
125.4	125.4	168
125.4	125.5	333
Approximate Percent of Pipeline Crossing Length		*2%*
Fairfield County, OH		
125.8	125.9	292
126.2	126.3	374
126.4	126.5	160
126.7	127.0	1,625
127.1	127.2	264
127.3	127.4	88
127.4	127.5	321
127.5	127.6	229
127.6	127.7	447
128.1	128.2	488
128.2	128.4	963
128.4	128.5	268
128.4	128.5	386
128.5	128.6	162
128.5	128.6	128
128.5	128.6	134
128.6	128.8	1,035
128.8	128.9	425
128.8	128.9	106
128.9	128.9	197
128.9	129.0	182
129.0	129.1	381
129.2	129.3	395
129.3	129.4	198
Approximate Percent of Pipeline Crossing Length		*1%*
Hocking County, OH		
129.3	129.5	406
129.4	129.6	542
129.5	129.6	478
129.6	129.7	91
129.6	129.7	311
129.7	129.8	240
129.7	129.8	201
129.8	129.9	275

APPENDIX G Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]		
Approximate Start (MP)	**Approximate End (MP)**	**Length Crossed by Centerline (feet)**
129.9	130.0	580
130.0	130.1	98
130.0	130.1	97
130.0	130.1	324
130.1	130.2	166
130.1	130.2	203
130.2	130.3	510
130.3	130.3	47
130.3	130.4	278
130.3	130.4	219
130.4	130.4	168
130.4	130.5	117
130.4	130.5	126
130.4	130.6	339
Approximate Percent of Pipeline Crossing Length		*0.7%*
LEX1		
Fairfield County, OH		
0.0	0.0	207
0.0	0.1	339
0.2	0.3	345
0.5	0.6	361
0.6	0.7	369
Approximate Percent of Pipeline Crossing Length		*0.2%*
R-801 Loop		
Hocking County, OH		
0.2	0.3	170
0.3	0.3	157
0.3	0.6	1,450
0.6	0.6	301
0.6	0.8	863
0.8	0.9	411
0.9	1.0	497
1.7	1.8	346
1.8	2.0	1,190
2.0	2.1	662
2.4	2.6	1,003
2.6	2.7	377
2.7	2.8	594
2.8	2.8	76
2.8	2.8	126
2.8	2.9	107
2.9	3.0	580
3.0	3.0	16
3.0	3.0	353

APPENDIX G – AREAS OF SHALLOW DEPTH TO BEDROCK CROSSED BY THE LEACH XPRESS PROJECT

APPENDIX G Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]		
Approximate Start (MP)	**Approximate End (MP)**	**Length Crossed by Centerline (feet)**
3.0	3.1	439
3.1	3.3	959
3.5	3.7	621
3.7	3.8	640
3.8	3.8	161
3.8	4.0	988
4.0	4.2	814
4.2	4.2	250
4.2	4.4	1,200
4.4	4.5	277
4.5	4.8	1,838
4.9	5.2	1,580
5.5	5.6	245
5.7	5.9	614
6.0	6.0	143
6.1	6.2	96
6.2	6.5	1,458
6.9	7.0	242
7.1	7.2	420
7.8	7.8	57
7.8	7.8	24
7.9	8.0	272
8.1	8.7	3,170
9.3	9.4	370
9.4	9.5	533
9.5	9.5	216
9.5	9.7	1,345
9.7	9.8	322
9.8	9.9	733
9.9	10.1	668
10.1	10.2	543
10.2	10.4	1,428
10.4	10.6	983
10.6	11.5	4,828
11.5	11.7	672
11.8	11.9	560
11.9	12.0	528
12.3	12.3	146
12.5	12.7	646
12.8	13.0	649
Approximate Percent of Pipeline Crossing Length		*5%*
Vinton County, OH		
13.4	13.4	265
Hocking County, OH		
13.4	13.5	147

APPENDIX G – AREAS OF SHALLOW DEPTH TO BEDROCK CROSSED BY THE LEACH XPRESS PROJECT

APPENDIX G Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]		
Approximate Start (MP)	**Approximate End (MP)**	**Length Crossed by Centerline (feet)**
Approximate Percent of Pipeline Crossing Length		*0.02%*
Vinton County, OH		
13.5	13.7	1,403
13.7	14.1	2,069
14.2	14.3	351
14.3	14.7	2,363
14.8	14.9	307
14.9	15.1	1,014
15.1	15.1	38
15.1	15.6	2,117
15.6	15.6	206
15.6	15.7	330
15.7	15.7	104
15.7	15.8	196
15.8	16.0	1,177
16.0	16.0	226
16.0	16.3	1,537
16.4	16.4	286
16.4	16.5	173
16.5	16.5	287
16.5	16.6	339
16.6	16.6	300
16.6	16.9	1,296
16.9	16.9	223
16.9	17.3	1,912
17.3	17.4	720
17.4	17.6	673
17.7	17.8	758
17.8	17.9	402
17.9	17.9	135
17.9	18.1	882
18.1	18.1	258
18.1	18.2	373
18.2	18.2	142
18.2	18.6	1,835
18.6	18.6	261
18.6	18.7	475
18.7	19.0	1,326
19.0	19.0	52
19.1	19.1	218
19.1	19.1	103
19.1	19.3	1,002
19.3	19.5	774
19.5	19.5	220
19.5	19.6	323

APPENDIX G
Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]

Approximate Start (MP)	Approximate End (MP)	Length Crossed by Centerline (feet)
19.6	19.6	349
19.8	19.9	484
19.9	20.0	541
20.0	20.1	422
20.1	20.1	133
20.1	20.2	249
20.2	20.4	1,152
20.4	20.5	415
20.5	20.6	914
20.6	20.7	465
20.7	20.8	306
20.8	20.9	330
20.9	20.9	327
20.9	21.0	213
21.0	21.0	457
21.0	21.1	309
21.1	21.2	560
21.2	21.3	330
21.3	21.7	2,444
21.7	21.8	159
21.8	21.8	383
21.8	22.0	731
22.0	22.1	690
22.1	22.3	848
22.3	22.3	259
22.4	22.5	478
22.5	22.5	270
22.5	22.6	190
22.6	22.6	266
22.6	22.6	232
22.6	22.7	185
22.7	22.7	102
22.7	22.8	431
22.8	22.9	293
22.9	22.9	107
22.9	22.9	301
22.9	23.0	432
23.0	23.0	121
23.0	23.1	158
23.1	23.2	396
23.2	23.3	522
23.3	23.3	409
23.3	23.4	177
23.4	23.4	454
23.4	23.6	739

APPENDIX G
Areas of Shallow Bedrock Crossed by the Leach XPress Project by Milepost [a]

Approximate Start (MP)	Approximate End (MP)	Length Crossed by Centerline (feet)
23.6	23.6	150
23.6	23.9	1,740
23.9	24.0	98
24.0	24.0	364
24.0	24.2	647
24.2	24.2	50
Approximate Percent of Pipeline Crossing Length		*6%*
BM-111 Loop		
Wayne County, WV		
0.7	0.8	115
0.8	0.8	181
0.8	1.1	1,115
1.1	1.3	1,086
1.3	1.3	415
1.3	1.4	503
1.4	1.5	87
1.5	1.5	144
1.5	1.6	427
1.6	1.7	480
1.7	1.8	426
1.8	2.1	1,413
2.1	2.1	190
2.1	2.2	553
2.3	2.3	294
2.3	2.4	200
Approximate Percent of Pipeline Crossing Length		*0.9%*

RR – Reroute adopted into the route during Columbia Gas' March 2016 supplemental filing

[a] Soils with shallow depth to bedrock are considered to be those with consolidated rock 60 inches or less from the surface, which represents areas that have potential to introduce rock to topsoil.

APPENDIX H
Oil and Gas Wells within 0.25 Mile of the Leach XPress Project

APPENDIX H – OIL AND GAS WELLS WITHIN 0.25 MILE OF THE LEACH XPRESS PROJECT

APPENDIX H Oil and Gas Wells Located within 0.25 Mile of the Leach XPress Project			
Approximate Milepost/Facility	**Type**	**Product**	**Status**
Pipeline Facilities			
LEX			
Marshall County, WV			
2.1	Plugged well	Stratigraphy test	Inactive
2.9	Plugged well	Stratigraphy test	Inactive
3.0	Plugged gas	Gas	Inactive
8.4, RR-1	Unknown Status	Unknown	Inactive
10.9	Dry methane	Methane	Inactive
Monroe County, OH			
28.6	Expired Permit	Unknown	Inactive
28.7	Plugged Gas	Gas	Inactive
39.4	Plugged oil	Oil	Inactive
39.5	Dry hole with oil show	Oil	Inactive
41.1	Gas	Gas	Active
41.9	Oil	Oil	Active
44.3	Dry hole	Unknown	Inactive
45.1	Oil	Oil	Active
46.8	Expired permit	Unknown	Inactive
50.8, RR-6	Unknown Status	Unknown	Inactive
51.9	Gas	Gas	Active
52.4	Expired permit	Unknown	Inactive
Noble County, OH			
62.0	Dry hole	Unknown	Inactive
63.9	Unknown status	Unknown	Inactive
69.2	Unknown status	Unknown	Inactive
73.9	Dry hole	Unknown	Inactive
74.0	Plugged gas	Gas	Inactive
Muskingum County, OH			
77.8	Plugged gas	Gas	Inactive
84.2	Dry hole	Unknown	Inactive
84.2	Oil and gas	Oil and gas	Inactive
Morgan County, OH			
85.8	Dry hole	Unknown	Inactive
91.0	Oil and gas	Oil and gas	Active
91.4	Oil and gas	Oil and gas	Active
92.0	Oil and gas	Oil and gas	Active
93.8	Dry hole	Unknown	Inactive
97.2	Dry hole	Unknown	Inactive
Perry County, OH			
TAR 42 (MP 85.3)	Oil and gas	Oil and gas	Inactive
100.7	Gas	Gas	Active
104.4	Plugged oil and gas	Oil and gas	Inactive
107.3	Plugged oil and gas	Oil and gas	Inactive
108.4	Plugged oil	Oil	Inactive
109.0	Plugged oil	Oil	Inactive
109.5	Plugged oil	Oil	Inactive
109.7	Plugged oil and gas	Oil and gas	Inactive
112.9	Plugged oil	Oil	Inactive
114.7	Plugged oil and gas	Oil and gas	Inactive

APPENDIX H – OIL AND GAS WELLS WITHIN 0.25 MILE OF THE LEACH XPRESS PROJECT

APPENDIX H
Oil and Gas Wells Located within 0.25 Mile of the Leach XPress Project

Approximate Milepost/Facility	Type	Product	Status
117.3	Oil	Oil	Inactive
117.9	Plugged oil	Oil	Inactive
118.0	Plugged oil and gas	Oil and gas	Inactive
Hocking County, OH			
124.9	Dry hole	Unknown	Inactive
Fairfield County, OH			
126.6	Gas	Gas	Inactive
128.0	Gas	Gas	Inactive
R-801 Loop			
Hocking County, OH			
0.5	Plugged gas	Gas	Inactive
1.8	Gas	Gas	Inactive
Vinton County, OH			
17.9	Plugged gas	Gas	Inactive
19.0	Dry hole	Unknown	Inactive
BM-111 Loop			
Lawrence County, OH			
0.0	Unknown	Stratigraphy test	Inactive
R-501 Abandonment			
Hocking County, OH			
2.6	Expired permit	Unknown	Inactive
Contractor/Staging/Pipe Yards			
LEX			
Monroe County, OH			
MP 42.3 (Pipe Yard 04 (Alternate))	Plugged gas	Gas	Inactive
Muskingum County, OH			
MP 100.3 (Pipe Yard 36) [a]	Dry hole	Unknown	Inactive
	Plugged oil and gas	Oil and gas	Inactive
	Plugged oil and gas	Oil and gas	Inactive
MP 100.3 (Pipe Yard 48) [a]	Oil and gas	Oil and gas	Active
Guernsey County, OH			
MP 63.1 (Pipe Yard 14) [a]	Plugged oil	Oil	Inactive
Fairfield County, OH			
MP 120.2 (Pipe Yard 11 (Alternate)) [a]	Plugged gas	Gas	Inactive
Noble County, OH			
MP 67.5 (Pipe Yard 33) [a]	Oil and gas	Oil and gas	Active
R-801 Loop			
Hocking County, OH			
MP 0.00 (Pipe Yard 41) [a]	Gas storage	Gas	Active
Vinton County, OH			
MP 13.5 (Pipe Yard 19) [a]	Dry hole	Unknown	Historic
MP 14.4 (Pipe Yard 20) [a]	Unknown	Unknown	Historic

Sources: WVDEP, 2014; 2011; Pennsylvania Spatial Data Access 2015a, 2015b; ODNR, 2014b

[a] Contractor yard is located offline; therefore, the milepost provided is associated with the nearest temporary workspace, additional temporary workspace, access road, or aboveground facility boundary.

APPENDIX I
Active and Abandoned Mines within 0.25 Mile of the Leach XPress Project

APPENDIX I
Active and Abandoned Mines within 0.25 mile of the LX and RXE Projects

Approximate Milepost		Distance and Direction from Project (miles)	Crossing Length (miles)	Elevation (feet)	Status	Type	Mine Name	Operator Name
Begin MP	**End MP**							
LEX								
Marshall County, WV								
1.8	2.1	N/A[a]	0.8	Unknown	Active (scheduled for completion December 2015)	Longwall, coal	Shoemaker	Murray Energy, Co.
2.1	2.4	N/A[a]	0.8	Unknown	Active (scheduled for completion September 2016)	Longwall, coal	Shoemaker	Murray Energy, Co.
2.4	2.7	N/A[a]	0.8	Unknown	Future (Sep. 2016– Sep. 2017)	Longwall, coal	Shoemaker	Murray Energy, Co.
3.1	3.4	N/A[a]	4.0	Unknown	Inactive (completed Aug. 2014)	Longwall, coal	Bailey	Consolidation Coal, Co.
3.4	3.8	N/A[a]	4.0	Unknown	Inactive (completed April 2015)	Longwall, coal	Bailey	Consolidation Coal, Co.
3.8	4.2	N/A[a]	4.0	Unknown	Active (scheduled for completion Feb. 2016)	Longwall, coal	Bailey	Consolidation Coal, Co.
4.2	4.5	N/A[a]	4.0	Unknown	Future (March 2016 – Jan. 2017	Longwall, coal	Bailey	Consolidation Coal, Co.
4.5	4.8	N/A[a]	4.0	Unknown	Future (Feb. 2017 – Jan. 2018)	Longwall, coal	Bailey	Consolidation Coal, Co.
4.8	5.3	N/A[a]	4.0	Unknown	Future (Jan. 2018 – Dec. 2018)	Longwall, coal	Bailey	Consolidation Coal, Co.
5.4	5.7	N/A[a]	4.0	Unknown	Future (Dec. 2018 – Nov. 2019)	Longwall, coal	Bailey	Consolidation Coal, Co.
5.7	6.0	N/A[a]	4.0	Unknown	Future (Nov. 2019 – Dec. 2020)	Longwall, coal	Bailey	Consolidation Coal, Co.
6.0	6.4	N/A[a]	4.0	Unknown	Future (Dec. 2020 – Nov. 2021)	Longwall, coal	Bailey	Consolidation Coal, Co.
6.4	6.7	N/A[a]	4.0	Unknown	Future (Nov. 2021 – Dec. 2022)	Longwall, coal	Bailey	Consolidation Coal, Co.
6.7	7.1	N/A[a]	4.0	Unknown	Future (Dec. 2022 – Nov. 2023)	Longwall, coal	Bailey	Consolidation Coal, Co.
7.2	7.5, RR-1	N/A[a]	4.0	Unknown	Future (Nov. 2023 – Dec. 2025)	Longwall, coal	Bailey	Consolidation Coal, Co.
9.6	9.9	N/A[a]	1.9	Unknown	Inactive	Longwall, coal	McElroy	Murray Energy, Co.
9.8	10.2	N/A[a]	1.9	Unknown	Future (January 2017- June 2017)	Longwall, coal	McElroy	Murray Energy, Co.
10.3	10.7	N/A[a]	1.9	Unknown	Unknown	Longwall, coal	McElroy	Murray Energy, Co.
10.9	11.7	N/A[a]	1.9	Unknown	Unknown	Longwall, coal	McElroy	Murray Energy, Co.
Monroe County, OH								
26.3, RR-5	33.7	N/A[a]	7.4	Unknown	Abandoned	Underground, coal	Marcoll	Quarto Mining, Co.
33.9	33.9	0.1 S	N/A[b]	Unknown	Active	Surface, coal	Unknown	Consolidation Coal, Co.

APPENDIX I
Active and Abandoned Mines within 0.25 mile of the LX and RXE Projects

Approximate Milepost		Distance and Direction from Project (miles)	Crossing Length (miles)	Elevation (feet)	Status	Type	Mine Name	Operator Name
Begin MP	End MP							
Noble County, OH								
54.70 RR-7	55.09 RR-7	N/A [a]	0.39	Unknown	Released for reclamation	Surface, coal	Unknown	B&N Coal, Inc.
55.2	55.2	0.03 S	N/A [b]	Unknown	Inactive	Surface, coal	Unknown	Orange Coal, Co.
55.25 RR-7	55.39 RR-7	N/A [a]	0.14	Unknown	Inactive	Surface, Coal	Unknown	Orange Coal, Co
55.9	55.9	0.1 SW	N/A [b]	1,046	Abandoned (1932)	Surface, coal	Horton	Eugene Horton
56.2	56.5	N/A [a]	1.8	Unknown	Released for reclamation	Surface, coal	Unknown	B&N Coal, Inc.
56.6	58.0	N/A [a]	1.8	Unknown	Released for reclamation	Surface, coal	Unknown	B&N Coal, Inc.
56.1	56.1	0.3 SW	N/A [b]	1,039	Abandoned (1953)	Surface, coal	Stephens	W.C. Stephens
59.4	59.4	0.3 N	N/A [b]	Unknown	Abandoned	Surface, coal	Unknown	Orange Coal, Co.
66.1	66.1	N/A [a]	2.1	557	Abandoned (1939)	Underground, coal	Caldwell	Cambridge Collieries, Co.
66.3	66.5	N/A [a]	2.1	557	Abandoned (1939)	Underground, coal	Caldwell	Cambridge Collieries, Co.
66.8	66.9	N/A [a]	2.1	557	Abandoned (1939)	Underground, coal	Caldwell	Cambridge Collieries, Co.
67.0	68.7	N/A [a]	2.1	557	Abandoned (1939)	Underground, coal	Caldwell	Cambridge Collieries, Co.
68.8	68.9	N/A [a]	2.1	557	Abandoned (1939)	Underground, coal	Caldwell	Cambridge Collieries, Co.
68.9	69.2	N/A [a]	0.3	570	Abandoned (1936)	Underground, coal	Imperial No. 1	New Forsythe Coal, Co.
70.1	70.2	N/A [a]	0.1	Unknown	Inactive	Surface, coal	Unknown	Knowlton Industries
70.3	70.3	N/A [a]	0.1	Unknown	Inactive	Surface, coal	Unknown	Knowlton Industries
71.7	71.7	0.1 S	N/A [b]	Unknown	Abandoned	Surface, coal	Unknown	Central Ohio Coal, Co.
71.8	71.8	N/A [a]	0.1	Unknown	Abandoned	Surface, coal	Unknown	Central Ohio Coal, Co.
71.8	71.9	N/A [a]	0.1	Unknown	Abandoned	Surface, coal	Unknown	Central Ohio Coal, Co.
71.8	71.8	N/A [a]	0.1	Unknown	Abandoned	Surface, coal	Unknown	Ohio Power, Co.
72.1	72.1	N/A [a]	0.1	Unknown	Abandoned	Surface, coal	Unknown	Ohio Power, Co.
72.1	72.1	0.3 SE	N/A [b]	950	Abandoned (1932)	Surface, coal	Hedge	R.T Doyenbarger.
72.3	75.2	N/A [a]	6.2	Unknown	Released for reclamation	Surface, coal	Unknown	Central Ohio Coal, Co.
75.3	78.6 [c]	N/A [a]	6.2	Unknown	Released for reclamation	Surface, coal	Unknown	Central Ohio Coal, Co.
Muskingum County, OH								
84.3	84.7	N/A [a]	0.9	Unknown	Abandoned	Surface, coal	Unknown	Ohio Power, Co.

APPENDIX I
Active and Abandoned Mines within 0.25 mile of the LX and RXE Projects

Approximate Milepost		Distance and Direction from Project (miles)	Crossing Length (miles)	Elevation (feet)	Status	Type	Mine Name	Operator Name
Begin MP	End MP							
84.7	85.2 [d]	N/A[a]	0.9	Unknown	Abandoned	Surface, coal	Unknown	Ohio Power, Co.
Morgan County, OH								
89.7	90.0	N/A [a]	0.28	733	Future [e]	Surface, gravel	Unknown	Muskingum River Gravel Company
Perry County, OH								
98.0	100.1	N/A[a]	2.1	763	Abandoned (1955)	Underground, coal	Misco	Muskingum Coal, Co.
98.3	99.9	N/A[a]	1.7	Unknown	Future[e]	Surface, limestone	Unknown	Lin Engineering
100.1	100.1	0.2 N	N/A[b]	Unknown	Released for reclamation	Surface, coal	Unknown	Crooksville Coal, Co.
100.3	100.5	N/A[a]	2.4	802	Abandoned (1985)	Underground, coal	Sunnyhill No. 9 North	Peabody Coal, Co.
100.5	100.7	N/A[a]	2.4	802	Abandoned (1985)	Underground, coal	Sunnyhill No. 9 North	Peabody Coal, Co.
100.7	101.9	N/A[a]	2.4	802	Abandoned (1985)	Underground, coal	Sunnyhill No. 9 North	Peabody Coal, Co.
101.1	101.4	N/A[a]	2.4	802	Abandoned (1985)	Underground, coal	Sunnyhill No. 9 North	Peabody Coal, Co.
101.5	101.7	N/A[a]	2.4	802	Abandoned (1985)	Underground, coal	Sunnyhill No. 9 North	Peabody Coal, Co.
101.8	102.0	N/A[a]	2.4	802	Abandoned (1985)	Underground, coal	Sunnyhill No. 9 North	Peabody Coal, Co.
102.2	102.4	N/A[a]	2.4	802	Abandoned (1985)	Underground, coal	Sunnyhill No. 9 North	Peabody Coal, Co.
102.5	102.7	N/A[a]	0.2	803	Abandoned (1956)	Underground, coal	Alexander No. 2	Alex Wilson Coal, Co.
103.1	103.1	0.1 S	N/A[b]	809	Abandoned (1945)	Underground, coal	Allen	Allen Bros. Coal, Co.
103.2	103.2	0.1 N	N/A[b]	804	Abandoned (1944)	Underground, coal	Fred Price	Fred Price Coal, Co.
103.3	104.0	N/A[a]	2.9	886	Abandoned (1967)	Underground, coal	Sunnyhill No. 7	Peabody Coal, Co.
104.1	104.4	N/A[a]	2.9	886	Abandoned (1967)	Underground, coal	Sunnyhill No. 8	Peabody Coal, Co.
104.4	104.5	N/A[a]	2.9	886	Abandoned (1967)	Underground, coal	Sunnyhill No. 9	Peabody Coal, Co.
104.6	104.6	N/A[a]	2.9	886	Abandoned (1967)	Underground, coal	Sunnyhill No. 10	Peabody Coal, Co.
104.9	105.4	N/A[a]	2.9	886	Abandoned (1967)	Underground, coal	Sunnyhill No. 11	Peabody Coal, Co.
105.4	106.5	N/A[a]	2.9	886	Abandoned (1967)	Underground, coal	Sunnyhill No. 12	Peabody Coal, Co.
104.3	104.3	0.2 N	N/A[b]	818	Abandoned (1937)	Underground, coal	Buchanan	Buchanan Coal, Co.
104.4	104.4	0.1 N	N/A[b]	816	Abandoned (1942)	Underground, coal	Bear Run	Bear Run Coal, Co.
105.4	106.5	N/A[a]	1.1	Unknown	Active	Surface, coal	Unknown	Heritage Coal Co.

APPENDIX I
Active and Abandoned Mines within 0.25 mile of the LX and RXE Projects

Approximate Milepost		Distance and Direction from Project (miles)	Crossing Length (miles)	Elevation (feet)	Status	Type	Mine Name	Operator Name
Begin MP	End MP							
106.8	107.3	N/A[a]	0.5	Unknown	Abandoned (1966)	Underground, coal	Sunnyhill No. 1	Peabody Coal, Co.
107.4	107.4	0.2 S	N/A[b]	Unknown	Abandoned (1923)	Underground, coal	Caledonian	Malone Bearls Coal, Co.
107.4	109.0	N/A[a]	1.9	956	Abandoned (1969)	Underground, coal	Sunnyhill No. 2	Peabody Coal, Co.
109.1	109.3	N/A[a]	1.9	956	Abandoned (1969)	Underground, coal	Sunnyhill No. 3	Peabody Coal, Co.
109.0	109.0	0.2 S	N/A[b]	940	Abandoned (1971)	Underground, coal	Sunnyhill No. 3	Peabody Coal, Co.
109.3	109.4	N/A[a]	0.5	Unknown	Released for reclamation	Surface, coal	Unknown	Buckingham Coal, Co.
109.5	109.9	N/A[a]	1.5	Unknown	Released for reclamation	Surface, coal	Unknown	Buckingham Coal, Co.
109.9	110.1	N/A[a]	0.2	Unknown	Inactive	Surface, coal	Unknown	Lominco, Inc.
110.1	110.1	0.2 N	N/A[b]	Unknown	Inactive	Surface, coal	Unknown	Star Mining Co. Inc.
111.7	111.7	0.2 S	N/A[b]	Unknown	Inactive	Surface, coal	Unknown	Star Mining Co. Inc.
112.9	113.3	N/A[a]	0.4	Unknown	Inactive	Surface, coal	Unknown	Star Mining Co. Inc.
112.7	112.7	<0.1 S	N/A[b]	Unknown	Abandoned	Surface, coal	Unknown	Sidwell Brothers
113.1	113.1	0.1 N	N/A[b]	987	Abandoned (1932)	Underground, coal	Studer	C.E. Studer
113.2	113.2	0.1 N	N/A[b]	991	Abandoned (1933)	Underground, coal	Sweeney	William M. Sweeney
R-801 Loop								
Vinton County, OH								
23.2	23.2	0.2 W	N/A[b]	Unknown	Inactive	Surface, coal	Unknown	Lawrence G. Daft
26.3	26.3	N/A[a]	0.0	Unknown	Released for reclamation	Surface, coal	Unknown	Elk Coal, Inc.
26.3	26.3	0.1 W	N/A[b]	Unknown	Released for reclamation	Abandoned (1986)	Unknown	Elk Coal, Inc.

Source: WVDEP, 2014, 2011; PASDA, 2015c; ODNR 2014c.
N/A – not applicable
RR – Reroute adopted into the route during Columbia Gas' March 2016 supplemental filing
[a] Mine is crossed by the proposed Project.
[b] Mine is not directly crossed by the project, but occurs within 0.25 mile of the project area.
[c] Mine is crossed in both Noble and Muskingum Counties, Ohio.
[d] Mine is crossed in both Muskingum and Morgan Counties, Ohio
[e] Project crosses area slated for future mining activities; however, Columbia is in negotiations with the associated mining company to purchase mineral rights along the proposed pipeline.